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**Mediterranean Marine Science**

Vol 23, No 3 (2022)

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doi: 10.12681/mms.28567

**To cite this article:**

SARROPOULOU, X. ., TSAPARIS, D. ., TSAGARAKIS, K. ., BADOUVAS, N. ., & TSIGENOPOULOS, C. S. (2022). Different patterns of population structure and genetic diversity of three mesopelagic fishes in the Greek Seas. *Mediterranean Marine Science*, *23*(3), 536–545. https://doi.org/10.12681/mms.28567

https://epublishing.ekt.gr | **e-Publisher:** EKT | **Downloaded at:** 11/09/2026 13:11:55

Supplementary Data

*Mediterranean Marine Science*
Indexed in WoS (Web of Science, ISI Thomson) and SCOPUS
The journal is available on line at http://www.medit-mar-sc.net
www.hcmr.gr
DOI: http://doi.org/10.12681/mms.28567

# Different patterns of population structure and genetic diversity of three mesopelagic fishes in the Greek Seas

**Xenia SARROPOULOU, Dimitris TSAPARIS, Konstantinos TSAGARAKIS, Nicholas BADOUVAS and Costas S. TSIGENOPOULOS**

*Mediterranean Marine Science, 23 (3) 2022*

**Table S1.** General information on the *H. benoiti* specimens used in the present study.

| AA | Specimen ID | Region | LONG (DD) | LAT (DD) | COI | | 12S | | 16S | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Haplotype | Genbank | Haplotype | Genbank | Haplotype | Genbank |
| Hb_01 | Bg_Kor_aut_01 | Corinthian Gulf | 38.10/38.15 | 22.81/22.73 | HHB_COI_01 | OK353945 | HHB_12S_01 | OK354211 | HHB_16S_01 | OK354267 |
| Hb_02 | Bg_Kor_aut_02 | | | | HHB_COI_01 | OK353946 | HHB_12S_01 | OK354212 | HHB_16S_01 | OK354268 |
| Hb_03 | Bg_Kor_aut_06 | | | | HHB_COI_01 | OK353947 | HHB_12S_01 | OK354213 | HHB_16S_01 | OK354269 |
| Hb_04 | Bg_Kor_aut_07 | | | | HHB_COI_01 | OK353948 | HHB_12S_01 | OK354214 | HHB_16S_01 | OK354270 |
| Hb_05 | H.b_Kor_sp_01 | | | | HHB_COI_01 | OK353949 | HHB_12S_01 | OK354215 | HHB_16S_01 | OK354271 |
| Hb_06 | H.b_Kor_sp_02 | | | | HHB_COI_01 | OK353950 | HHB_12S_01 | OK354216 | HHB_16S_02 | OK354272 |
| Hb_07 | H.b_Kor_sp_03 | | | | HHB_COI_01 | OK353951 | HHB_12S_01 | OK354217 | HHB_16S_01 | OK354273 |
| Hb_08 | Hb_Kor_aut_04 | | | | HHB_COI_01 | OK353952 | HHB_12S_01 | OK354218 | HHB_16S_01 | OK354274 |
| Hb_09 | Hb_Kor_sp_06 | | | | HHB_COI_01 | OK353953 | HHB_12S_02 | OK354219 | HHB_16S_02 | OK354275 |
| Hb_10 | Hb_Kor_aut_06 | | | | HHB_COI_01 | OK353954 | HHB_12S_01 | OK354220 | HHB_16S_02 | OK354276 |
| Hb_11 | H.b_Kor_sp_07 | | | | HHB_COI_01 | OK353955 | HHB_12S_01 | OK354221 | HHB_16S_01 | OK354277 |
| Hb_12 | Hb_Kor_sp_09 | | | | HHB_COI_01 | OK353956 | HHB_12S_01 | OK354222 | HHB_16S_01 | OK354278 |
| Hb_13 | Hb_Kor_aut_09 | | | | HHB_COI_01 | OK353957 | HHB_12S_03 | OK354223 | HHB_16S_01 | OK354279 |
| Hb_14 | Hb_Kor_sp_10 | | | | HHB_COI_01 | OK353958 | HHB_12S_03 | OK354224 | HHB_16S_01 | OK354280 |
| Hb_15 | Hb_Sar_sp_02 | Saronic Gulf | 37.64/37.61 | 23.20/23.27 | HHB_COI_01 | OK353959 | HHB_12S_01 | OK354225 | HHB_16S_03 | OK354281 |
| Hb_16 | Hb_Sar_sp_03 | | | | HHB_COI_01 | OK353960 | HHB_12S_01 | OK354226 | HHB_16S_02 | OK354282 |
| Hb_17 | Hb_Sar_sp_05 | | | | HHB_COI_01 | OK353961 | HHB_12S_01 | OK354227 | HHB_16S_02 | OK354283 |
| Hb_18 | Hb_Sar_sp_08 | | | | HHB_COI_01 | OK353962 | HHB_12S_01 | OK354228 | HHB_16S_02 | OK354284 |
| Hb_19 | Hb_Sar_sp_09 | | | | HHB_COI_01 | OK353963 | HHB_12S_01 | OK354229 | HHB_16S_02 | OK354285 |
| Hb_20 | Hb_Sar_sp_10 | | | | HHB_COI_01 | OK353964 | HHB_12S_01 | OK354230 | HHB_16S_02 | OK354286 |
| Hb_21 | Hb_Sar_11 | | | | HHB_COI_02 | OK353965 | HHB_12S_04 | OK354231 | HHB_16S_02 | OK354287 |
| Hb_22 | Hb_Sar_12 | | | | HHB_COI_01 | OK353966 | HHB_12S_01 | OK354232 | HHB_16S_04 | OK354288 |
| Hb_23 | Hb_Sar_13 | | | | HHB_COI_01 | OK353967 | HHB_12S_01 | OK354233 | HHB_16S_05 | OK354289 |
| Hb_24 | Hb_Sar_14 | | | | HHB_COI_01 | OK353968 | HHB_12S_01 | OK354234 | HHB_16S_06 | OK354290 |
| Hb_25 | Hb_Sar_15 | | | | HHB_COI_01 | OK353969 | HHB_12S_01 | OK354235 | HHB_16S_01 | OK354291 |
| Hb_26 | Hb_Sar_16 | | | | HHB_COI_01 | OK353970 | HHB_12S_01 | OK354236 | HHB_16S_07 | OK354292 |
| Hb_27 | Hb_Sar_17 | | | | HHB_COI_01 | OK353971 | HHB_12S_01 | OK354237 | HHB_16S_02 | OK354293 |
| Hb_28 | Hb_Sar_18 | | | | HHB_COI_01 | OK353972 | HHB_12S_01 | OK354238 | HHB_16S_08 | OK354294 |

***Continued***

*Table S1 continued*

| AA | Specimen ID | Region | LONG (DD) | LAT (DD) | COI | | 12S | | 16S | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Haplotype | Genbank | Haplotype | Genbank | Haplotype | Genbank |
| Hb_29 | Hb_NAT_02 | North Aegean Sea | 39.81 | 23.93 | HHB_COI_01 | OK353973 | HHB_12S_01 | OK354239 | HHB_16S_02 | OK354295 |
| Hb_30 | Hb_NAT_03 | | | | HHB_COI_01 | OK353974 | HHB_12S_05 | OK354240 | HHB_16S_02 | OK354296 |
| Hb_31 | Hb_NAT_04 | | | | HHB_COI_01 | OK353975 | HHB_12S_01 | OK354241 | HHB_16S_02 | OK354297 |
| Hb_32 | Hb_NAT_05 | | | | HHB_COI_01 | OK353976 | HHB_12S_01 | OK354242 | HHB_16S_02 | OK354298 |
| Hb_33 | Hb_NAT_07 | | | | HHB_COI_01 | OK353977 | HHB_12S_06 | OK354243 | HHB_16S_02 | OK354299 |
| Hb_34 | Hb_NAT_08 | | | | HHB_COI_01 | OK353978 | HHB_12S_01 | OK354244 | HHB_16S_02 | OK354300 |
| Hb_35 | Hb_NAT_09 | | | | HHB_COI_01 | OK353979 | HHB_12S_01 | OK354245 | HHB_16S_02 | OK354301 |
| Hb_36 | Hb_NAT_10 | | | | HHB_COI_01 | OK353980 | HHB_12S_01 | OK354246 | HHB_16S_02 | OK354302 |
| Hb_37 | Hb_NAT_11 | | | | HHB_COI_01 | OK353981 | HHB_12S_01 | OK354247 | HHB_16S_02 | OK354303 |
| Hb_38 | Hb_NAT_12 | | | | HHB_COI_01 | OK353982 | HHB_12S_01 | OK354248 | HHB_16S_02 | OK354304 |
| Hb_39 | Hb_NAT_14 | | | | HHB_COI_01 | OK353983 | HHB_12S_01 | OK354249 | HHB_16S_09 | OK354305 |
| Hb_40 | Hb_NAT_16 | | | | HHB_COI_01 | OK353984 | HHB_12S_01 | OK354250 | HHB_16S_02 | OK354306 |
| Hb_41 | Hb_NAT_18 | | | | HHB_COI_01 | OK353985 | HHB_12S_01 | OK354251 | HHB_16S_10 | OK354307 |
| Hb_42 | Hb_NAT_20 | | | | HHB_COI_01 | OK353986 | HHB_12S_01 | OK354252 | HHB_16S_11 | OK354308 |
| Hb_43 | Hb_Her_01 | Cretan Sea | 35.45/ 35.50 | 25.07/ 25.01 | HHB_COI_01 | OK353987 | HHB_12S_01 | OK354253 | HHB_16S_02 | OK354309 |
| Hb_44 | Hb_Her_02 | | | | HHB_COI_01 | OK353988 | HHB_12S_01 | OK354254 | HHB_16S_02 | OK354310 |
| Hb_45 | Hb_Her_03 | | | | HHB_COI_01 | OK353989 | HHB_12S_01 | OK354255 | HHB_16S_02 | OK354311 |
| Hb_46 | Hb_Her_05 | | | | HHB_COI_01 | OK353990 | HHB_12S_01 | OK354256 | HHB_16S_02 | OK354312 |
| Hb_47 | Hb_Her_06 | | | | HHB_COI_01 | OK353991 | HHB_12S_01 | OK354257 | HHB_16S_02 | OK354313 |
| Hb_48 | Hb_Her_07 | | | | HHB_COI_01 | OK353992 | HHB_12S_01 | OK354258 | HHB_16S_02 | OK354314 |
| Hb_49 | Hb_Her_08 | | | | HHB_COI_03 | OK353993 | HHB_12S_01 | OK354259 | HHB_16S_12 | OK354315 |
| Hb_50 | Hb_Her_09 | | | | HHB_COI_01 | OK353994 | HHB_12S_01 | OK354260 | HHB_16S_02 | OK354316 |
| Hb_51 | Hb_Her_10 | | | | HHB_COI_01 | OK353995 | HHB_12S_01 | OK354261 | HHB_16S_02 | OK354317 |
| Hb_52 | Hb_Her_11 | | | | HHB_COI_01 | OK353996 | HHB_12S_01 | OK354262 | HHB_16S_13 | OK354318 |
| Hb_53 | Hb_Her_12 | | | | HHB_COI_01 | OK353997 | HHB_12S_01 | OK354263 | HHB_16S_02 | OK354319 |
| Hb_54 | Hb_Her_13 | | | | HHB_COI_01 | OK353998 | HHB_12S_01 | OK354264 | HHB_16S_14 | OK354320 |
| Hb_55 | Hb_Her_14 | | | | HHB_COI_01 | OK353999 | HHB_12S_01 | OK354265 | HHB_16S_02 | OK354321 |
| Hb_56 | Hb_Her_15 | | | | HHB_COI_01 | OK354000 | HHB_12S_01 | OK354266 | HHB_16S_02 | OK354322 |

**Table S2.** General information on the *M. muelleri* specimens used in the present study.

| AA | Specimen ID | Region | LONG (DD) | LAT (DD) | COI | | 12S | | 16S | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Haplotype | Genbank | Haplotype | Genbank | Haplotype | Genbank |
| Mm_01 | Mm_Kor_01 | Corinthian Gulf | 38.36 | 22.12 | HMM_COI_01 | OK337619 | HMM_12S_01 | OK356812 | HMM_16S_01 | OK354001 |
| Mm_02 | Mm_Kor_02 | | | | HMM_COI_02 | OK337620 | HMM_12S_01 | OK356813 | HMM_16S_01 | OK354002 |
| Mm_03 | Mm_Kor_03 | | | | HMM_COI_03 | OK337621 | HMM_12S_01 | OK356814 | HMM_16S_01 | OK354003 |
| Mm_04 | Mm_Kor_04 | | | | HMM_COI_04 | OK337622 | HMM_12S_02 | OK356815 | HMM_16S_01 | OK354004 |
| Mm_05 | Mm_Kor_05 | | | | HMM_COI_02 | OK337623 | HMM_12S_01 | OK356816 | HMM_16S_02 | OK354005 |
| Mm_06 | Mm_Kor_06 | | | | HMM_COI_02 | OK337624 | HMM_12S_01 | OK356817 | HMM_16S_03 | OK354006 |
| Mm_07 | Mm_Kor_07 | | | | HMM_COI_02 | OK337625 | HMM_12S_01 | OK356818 | HMM_16S_01 | OK354007 |
| Mm_08 | Mm_Kor_08 | | | | HMM_COI_02 | OK337626 | HMM_12S_01 | OK356819 | HMM_16S_01 | OK354008 |
| Mm_09 | Mm_Kor_10 | | | | HMM_COI_02 | OK337627 | HMM_12S_03 | OK356820 | HMM_16S_04 | OK354009 |
| Mm_10 | Mm_Kor_11 | | | | HMM_COI_04 | OK337628 | HMM_12S_02 | OK356821 | HMM_16S_01 | OK354010 |
| Mm_11 | Mm_Kor_12 | | | | HMM_COI_02 | OK337629 | HMM_12S_01 | OK356822 | HMM_16S_05 | OK354011 |
| Mm_12 | Mm_Kor_13 | | | | HMM_COI_02 | OK337630 | HMM_12S_01 | OK356823 | HMM_16S_01 | OK354012 |
| Mm_13 | Mm_Kor_16 | | | | HMM_COI_04 | OK337631 | HMM_12S_01 | OK356824 | HMM_16S_01 | OK354013 |
| Mm_14 | Mm_Kor_17 | | | | HMM_COI_05 | OK337632 | HMM_12S_01 | OK356825 | HMM_16S_01 | OK354014 |
| Mm_15 | Mm_Sar_01 | Saronic Gulf | 37.73 | 23.22 | HMM_COI_02 | OK337633 | HMM_12S_01 | OK356826 | HMM_16S_01 | OK354015 |
| Mm_16 | Mm_Sar_02 | | | | HMM_COI_02 | OK337634 | HMM_12S_01 | OK356827 | HMM_16S_01 | OK354016 |
| Mm_17 | Mm_Sar_03 | | | | HMM_COI_02 | OK337635 | HMM_12S_01 | OK356828 | HMM_16S_01 | OK354017 |
| Mm_18 | Mm_Sar_04 | | | | HMM_COI_02 | OK337636 | HMM_12S_04 | OK356829 | HMM_16S_01 | OK354018 |
| Mm_19 | Mm_Sar_06 | | | | HMM_COI_02 | OK337637 | HMM_12S_01 | OK356830 | HMM_16S_01 | OK354019 |
| Mm_20 | Mm_Sar_08 | | | | HMM_COI_02 | OK337638 | HMM_12S_01 | OK356831 | HMM_16S_06 | OK354020 |
| Mm_21 | Mm_Sar_09 | | | | HMM_COI_02 | OK337639 | HMM_12S_01 | OK356832 | HMM_16S_01 | OK354021 |
| Mm_22 | Mm_Sar_10 | | | | HMM_COI_02 | OK337640 | HMM_12S_01 | OK356833 | HMM_16S_01 | OK354022 |
| Mm_23 | Mm_Sar_13 | | | | HMM_COI_02 | OK337641 | HMM_12S_01 | OK356834 | HMM_16S_01 | OK354023 |
| Mm_24 | Mm_Sar_14 | | | | HMM_COI_02 | OK337642 | HMM_12S_01 | OK356835 | HMM_16S_01 | OK354024 |
| Mm_25 | Mm_Sar_16 | | | | HMM_COI_02 | OK337643 | HMM_12S_01 | OK356836 | HMM_16S_01 | OK354025 |
| Mm_26 | Mm_Sar_17 | | | | HMM_COI_04 | OK337644 | HMM_12S_01 | OK356837 | HMM_16S_01 | OK354026 |
| Mm_27 | Mm_Sar_18 | | | | HMM_COI_02 | OK337645 | HMM_12S_01 | OK356838 | HMM_16S_01 | OK354027 |
| Mm_28 | Mm_Sar_19 | | | | HMM_COI_02 | OK337646 | HMM_12S_05 | OK356839 | HMM_16S_01 | OK354028 |
| Mm_29 | Mm_Lim_01 | North Aegean Sea | 39.92 | 24.89 | HMM_COI_02 | OK337647 | HMM_12S_01 | OK356840 | HMM_16S_01 | OK354029 |
| Mm_30 | Mm_Lim_04 | | | | HMM_COI_02 | OK337648 | HMM_12S_01 | OK356841 | HMM_16S_07 | OK354030 |
| Mm_31 | Mm_Lim_05 | | | | HMM_COI_02 | OK337649 | HMM_12S_01 | OK356842 | HMM_16S_06 | OK354031 |
| Mm_32 | M.m_Lim_07 | | | | HMM_COI_04 | OK337650 | HMM_12S_01 | OK356843 | HMM_16S_08 | OK354032 |
| Mm_33 | M.m_Lim_08 | | | | HMM_COI_02 | OK337651 | HMM_12S_01 | OK356844 | HMM_16S_01 | OK354033 |
| Mm_34 | Mm_Lim_11 | | | | HMM_COI_02 | OK337652 | HMM_12S_01 | OK356845 | HMM_16S_01 | OK354034 |
| Mm_35 | Mm_Lim_12 | | | | HMM_COI_02 | OK337653 | HMM_12S_01 | OK356846 | HMM_16S_01 | OK354035 |
| Mm_36 | M.m_Lim_13 | | | | HMM_COI_06 | OK337654 | HMM_12S_01 | OK356847 | HMM_16S_01 | OK354036 |
| Mm_37 | M.m_Lim_14 | | | | HMM_COI_04 | OK337655 | HMM_12S_01 | OK356848 | HMM_16S_01 | OK354037 |
| Mm_38 | M.m_Lim_15 | | | | HMM_COI_02 | OK337656 | HMM_12S_06 | OK356849 | HMM_16S_01 | OK354038 |
| Mm_39 | Mm_Lim_16 | | | | HMM_COI_07 | OK337657 | HMM_12S_01 | OK356850 | HMM_16S_09 | OK354039 |
| Mm_40 | M.m_Lim_17 | | | | HMM_COI_02 | OK337658 | HMM_12S_01 | OK356851 | HMM_16S_01 | OK354040 |
| Mm_41 | M.m_Lim_19 | | | | HMM_COI_07 | OK337659 | HMM_12S_01 | OK356852 | HMM_16S_01 | OK354041 |
| Mm_42 | M.m_Lim_20 | | | | HMM_COI_07 | OK337660 | HMM_12S_01 | OK356853 | HMM_16S_01 | OK354042 |

***Continued***

*Table S2 continued*

| AA | Specimen ID | Region | LONG (DD) | LAT (DD) | COI | | 12S | | 16S | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Haplotype | Genbank | Haplotype | Genbank | Haplotype | Genbank |
| Mm_43 | Mm_Her_01 | Cretan Sea | 35.47 | 25.16 | HMM_COI_07 | OK337661 | HMM_12S_01 | OK356854 | HMM_16S_01 | OK354043 |
| Mm_44 | Mm_Her_03 | | | | HMM_COI_08 | OK337662 | HMM_12S_01 | OK356855 | HMM_16S_01 | OK354044 |
| Mm_45 | Mm_Her_04 | | | | HMM_COI_09 | OK337663 | HMM_12S_01 | OK356856 | HMM_16S_01 | OK354045 |
| Mm_46 | Mm_Her_06 | | | | HMM_COI_04 | OK337664 | HMM_12S_07 | OK356857 | HMM_16S_01 | OK354046 |
| Mm_47 | Mm_Her_07 | | | | HMM_COI_02 | OK337665 | HMM_12S_01 | OK356858 | HMM_16S_01 | OK354047 |
| Mm_48 | Mm_Her_09 | | | | HMM_COI_04 | OK337666 | HMM_12S_08 | OK356859 | HMM_16S_01 | OK354048 |
| Mm_49 | Mm_Her_11 | | | | HMM_COI_02 | OK337667 | HMM_12S_01 | OK356860 | HMM_16S_01 | OK354049 |
| Mm_50 | Mm_Her_12 | | | | HMM_COI_02 | OK337668 | HMM_12S_09 | OK356861 | HMM_16S_01 | OK354050 |
| Mm_51 | Mm_Her_13 | | | | HMM_COI_02 | OK337669 | HMM_12S_10 | OK356862 | HMM_16S_01 | OK354051 |
| Mm_52 | Mm_Her_15 | | | | HMM_COI_02 | OK337670 | HMM_12S_06 | OK356863 | HMM_16S_01 | OK354052 |
| Mm_53 | Mm_Her_16 | | | | HMM_COI_02 | OK337671 | HMM_12S_01 | OK356864 | HMM_16S_01 | OK354053 |
| Mm_54 | Mm_Her_17 | | | | HMM_COI_02 | OK337672 | HMM_12S_06 | OK356865 | HMM_16S_01 | OK354054 |
| Mm_55 | Mm_Her_18 | | | | HMM_COI_02 | OK337673 | HMM_12S_01 | OK356866 | HMM_16S_10 | OK354055 |
| Mm_56 | Mm_Her_19 | | | | HMM_COI_02 | OK337674 | HMM_12S_01 | OK356867 | HMM_16S_01 | OK354056 |

**Table S3.** General information on the *B. glaciale* specimens used in the present study.

| AA | Specimen ID | Region | LONG (DD) | LAT (DD) | COI | | 12S | | 16S | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Haplotype | Genbank | Haplotype | Genbank | Haplotype | Genbank |
| Bg_01 | Bg_Kor_sp_01 | Corinthian Gulf | 38.15/ 38.10 | 22.73/ 22.81 | HBG_COI_01 | OK353887 | HBG_12S_01 | OK354057 | HBG_16S_01 | OK354114 |
| Bg_02 | Bg_Kor_sp_02 | | | | HBG_COI_01 | OK353888 | HBG_12S_01 | OK354058 | HBG_16S_01 | OK354115 |
| Bg_03 | Bg_Kor_aut_04 | | | | HBG_COI_01 | OK353889 | HBG_12S_01 | OK354059 | HBG_16S_01 | OK354116 |
| Bg_04 | Hb_Kor_sp_04 | | | | HBG_COI_02 | OK353890 | HBG_12S_01 | OK354060 | HBG_16S_02 | OK354117 |
| Bg_05 | Bg_Kor_aut_05 | | | | HBG_COI_01 | OK353891 | HBG_12S_02 | OK354061 | HBG_16S_01 | OK354118 |
| Bg_06 | Bg_Kor_aut_09 | | | | HBG_COI_01 | OK353892 | HBG_12S_01 | OK354062 | HBG_16S_03 | OK354119 |
| Bg_07 | Bg_Kor_aut_10 | | | | HBG_COI_03 | OK353893 | HBG_12S_03 | OK354063 | HBG_16S_01 | OK354120 |
| Bg_08 | Bg_Kor_aut_11 | | | | HBG_COI_01 | OK353894 | HBG_12S_01 | OK354064 | HBG_16S_04 | OK354121 |
| Bg_09 | Bg_Kor_aut_12 | | | | HBG_COI_01 | OK353895 | HBG_12S_04 | OK354065 | HBG_16S_01 | OK354122 |
| Bg_10 | Bg_Kor_aut_13 | | | | HBG_COI_01 | OK353896 | HBG_12S_01 | OK354066 | HBG_16S_01 | OK354123 |
| Bg_11 | Bg_Kor_aut_14 | | | | HBG_COI_04 | OK353897 | HBG_12S_01 | OK354067 | HBG_16S_01 | OK354124 |
| Bg_12 | Bg_Kor_aut_16 | | | | HBG_COI_01 | OK353898 | HBG_12S_01 | OK354068 | HBG_16S_01 | OK354125 |
| Bg_13 | Bg_Kor_aut_17 | | | | HBG_COI_05 | OK353899 | HBG_12S_01 | OK354069 | HBG_16S_01 | OK354126 |
| Bg_14 | Bg_Kor_aut_18 | | | | HBG_COI_01 | OK353900 | HBG_12S_01 | OK354070 | HBG_16S_01 | OK354127 |
| Bg_15 | Bg_Sar_sp_01 | Saronic Gulf | 37.61/ 37.64 | 23.27/ 23.20 | HBG_COI_01 | OK353901 | HBG_12S_01 | OK354071 | HBG_16S_01 | OK354128 |
| Bg_16 | Bg_Sar_sp_02 | | | | HBG_COI_06 | OK353902 | HBG_12S_01 | OK354072 | HBG_16S_05 | OK354129 |
| Bg_17 | Bg_Sar_sp_03 | | | | HBG_COI_01 | OK353903 | HBG_12S_01 | OK354073 | HBG_16S_06 | OK354130 |
| Bg_18 | Bg_Sar_sp_04 | | | | HBG_COI_01 | OK353904 | HBG_12S_01 | OK354074 | HBG_16S_01 | OK354131 |
| Bg_19 | Bg_Sar_sp_05 | | | | HBG_COI_07 | OK353905 | HBG_12S_05 | OK354075 | HBG_16S_01 | OK354132 |
| Bg_20 | Bg_Sar_sp_06 | | | | HBG_COI_01 | OK353906 | HBG_12S_01 | OK354076 | HBG_16S_07 | OK354133 |
| Bg_21 | Bg_Sar_sp_07 | | | | HBG_COI_08 | OK353907 | HBG_12S_01 | OK354077 | HBG_16S_08 | OK354134 |
| Bg_22 | Bg_Sar_sp_09 | | | | HBG_COI_01 | OK353908 | HBG_12S_01 | OK354078 | HBG_16S_01 | OK354135 |
| Bg_23 | Bg_Sar_sp_10 | | | | HBG_COI_01 | OK353909 | HBG_12S_01 | OK354079 | HBG_16S_01 | OK354136 |
| Bg_24 | Bg_Sar_sp_11 | | | | HBG_COI_01 | OK353910 | HBG_12S_01 | OK354080 | HBG_16S_01 | OK354137 |
| Bg_25 | Bg_Sar_sp_12 | | | | HBG_COI_01 | OK353911 | HBG_12S_01 | OK354081 | HBG_16S_01 | OK354138 |
| Bg_26 | Bg_Sar_sp_13 | | | | HBG_COI_09 | OK353912 | HBG_12S_01 | OK354082 | HBG_16S_05 | OK354139 |
| Bg_27 | Bg_Sar_sp_18 | | | | HBG_COI_10 | OK353913 | HBG_12S_01 | OK354083 | HBG_16S_01 | OK354140 |
| Bg_28 | Bg_Sar_sp_19 | | | | HBG_COI_01 | OK353914 | HBG_12S_01 | OK354084 | HBG_16S_01 | OK354141 |
| Bg_29 | Bg_NAT_01 | North Aegean Sea | 39.81 | 23.93 | HBG_COI_11 | OK353915 | HBG_12S_01 | OK354085 | HBG_16S_01 | OK354142 |
| Bg_30 | Bg_NAT_02 | | | | HBG_COI_10 | OK353916 | HBG_12S_01 | OK354086 | HBG_16S_01 | OK354143 |
| Bg_31 | Bg_NAT_03 | | | | HBG_COI_12 | OK353917 | HBG_12S_01 | OK354087 | HBG_16S_09 | OK354144 |
| Bg_32 | Bg_NAT_06 | | | | HBG_COI_13 | OK353918 | HBG_12S_06 | OK354088 | HBG_16S_05 | OK354145 |
| Bg_33 | Bg_NAT_07 | | | | HBG_COI_01 | OK353919 | HBG_12S_01 | OK354089 | HBG_16S_10 | OK354146 |
| Bg_34 | Bg_NAT_08 | | | | HBG_COI_14 | OK353920 | HBG_12S_07 | OK354090 | HBG_16S_01 | OK354147 |
| Bg_35 | Bg_NAT_09 | | | | HBG_COI_01 | OK353921 | HBG_12S_01 | OK354091 | HBG_16S_01 | OK354148 |
| Bg_36 | Bg_NAT_11 | | | | HBG_COI_01 | OK353922 | HBG_12S_01 | OK354092 | HBG_16S_11 | OK354149 |
| Bg_37 | Bg_NAT_12 | | | | HBG_COI_15 | OK353923 | HBG_12S_01 | OK354093 | HBG_16S_01 | OK354150 |
| Bg_38 | Bg_NAT_14 | | | | HBG_COI_01 | OK353924 | HBG_12S_01 | OK354094 | HBG_16S_01 | OK354151 |
| Bg_39 | Bg_NAT_15 | | | | HBG_COI_16 | OK353925 | HBG_12S_01 | OK354095 | HBG_16S_01 | OK354152 |
| Bg_40 | Bg_NAT_16 | | | | HBG_COI_13 | OK353926 | HBG_12S_08 | OK354096 | HBG_16S_01 | OK354153 |
| Bg_41 | Bg_NAT_17 | | | | HBG_COI_01 | OK353927 | HBG_12S_01 | OK354097 | HBG_16S_01 | OK354154 |
| Bg_42 | Bg_NAT_19 | | | | HBG_COI_17 | OK353928 | HBG_12S_01 | OK354098 | HBG_16S_01 | OK354155 |

***Continued***

*Table S3 continued*

| AA | Specimen ID | Region | LONG (DD) | LAT (DD) | COI | | 12S | | 16S | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Haplotype | Genbank | Haplotype | Genbank | Haplotype | Genbank |
| Bg_43 | Bg_Her_01 | Cretan Sea | 35.50 | 25.01 | HBG_COI_18 | OK353929 | HBG_12S_01 | OK354099 | HBG_16S_01 | OK354156 |
| Bg_44 | Bg_Her_02 | | | | HBG_COI_01 | OK353930 | HBG_12S_01 | OK354100 | HBG_16S_01 | OK354157 |
| Bg_45 | Bg_Her_03 | | | | HBG_COI_03 | OK353931 | HBG_12S_01 | OK354101 | HBG_16S_01 | OK354158 |
| Bg_46 | Bg_Her_04 | | | | HBG_COI_01 | OK353932 | HBG_12S_01 | OK354102 | HBG_16S_01 | OK354159 |
| Bg_47 | Bg_Her_05 | | | | HBG_COI_01 | OK353933 | HBG_12S_01 | OK354103 | HBG_16S_12 | OK354160 |
| Bg_48 | Bg_Her_06 | | | | HBG_COI_03 | OK353934 | HBG_12S_01 | OK354104 | HBG_16S_01 | OK354161 |
| Bg_49 | Bg_Her_07 | | | | HBG_COI_01 | OK353935 | HBG_12S_01 | OK354105 | HBG_16S_01 | OK354162 |
| Bg_50 | Bg_Her_08 | | | | HBG_COI_01 | OK353936 | HBG_12S_01 | OK354106 | HBG_16S_01 | OK354163 |
| Bg_51 | Bg_Her_09 | | | | HBG_COI_01 | OK353937 | HBG_12S_01 | OK354107 | HBG_16S_01 | OK354164 |
| Bg_52 | Bg_Her_10 | | | | HBG_COI_03 | OK353938 | HBG_12S_01 | OK354108 | HBG_16S_13 | OK354165 |
| Bg_53 | Bg_Her_11 | | | | HBG_COI_19 | OK353939 | HBG_12S_01 | OK354109 | HBG_16S_01 | OK354166 |
| Bg_54 | Bg_Her_12 | | | | HBG_COI_03 | OK353940 | HBG_12S_01 | OK354110 | HBG_16S_14 | OK354167 |
| Bg_55 | Bg_Her_13 | | | | HBG_COI_01 | OK353941 | HBG_12S_01 | OK354111 | HBG_16S_01 | OK354168 |
| Bg_56 | Bg_Her_14 | | | | HBG_COI_01 | OK353942 | HBG_12S_01 | OK354112 | HBG_16S_15 | OK354169 |

**Table S4.** Information on the COI sequences from Genbank and BOLD databases used for phylogeagraphic analyses.

| AA | Species | Sampling Location | Genbank | BOLD | Reference | Comments |
|---|---|---|---|---|---|---|
| 1 | *H. benoiti* | Balearic Sea | KC616370 | | - | |
| 2 | *H. benoiti* | Balearic Sea | KC616371 | | - | |
| 3 | *H. benoiti* | Balearic Sea | KC616372 | | - | |
| 4 | *H. benoiti* | Balearic Sea | KC616374 | | - | |
| 5 | *H. benoiti* | Sicily | KP337919 | | Pappalardo *et al.*, 2015 | Haplotype sequence - 3 specimens |
| 6 | *H. benoiti* | Sicily | KP337920 | | Pappalardo *et al.*, 2015 | Haplotype sequence - 2 specimens |
| 7 | *H. benoiti* | Sicily | KP337921 | | Pappalardo *et al.*, 2015 | |
| 8 | *H. benoiti* | Sicily | KP337922 | | Pappalardo *et al.*, 2015 | |
| 9 | *H. benoiti* | Sicily | KP337923 | | Pappalardo *et al.*, 2015 | Haplotype sequence - 7 specimens |
| 10 | *H. benoiti* | Sicily | KP337924 | | Pappalardo *et al.*, 2015 | |
| 11 | *H. benoiti* | Turkey | HQ167651 | | - | |
| 12 | *H. benoiti* | North Atlantic Ocean | EU148200 | | - | |
| 13 | *H. benoiti* | North Atlantic Ocean | EU148201 | | - | |
| 14 | *H. benoiti* | North Atlantic Ocean | EU148202 | | - | |
| 15 | *H. benoiti* | Gulf of Mexico | MF040977 | | - | |
| 16 | *H. benoiti* | Gulf of Mexico | MF041015 | | - | |
| 17 | *H. benoiti* | Gulf of Mexico | MF041064 | | - | |
| 18 | *H. benoiti* | Gulf of Mexico | MF041296 | | - | |
| 19 | *H. benoiti* | Gulf of Mexico | MF041355 | | - | |

***Continued***

*Table S4 continued*

| AA | Species | Sampling Location | Genbank | BOLD | Reference | Comments |
|---|---|---|---|---|---|---|
| 20 | *H. benoiti* | Gulf of Mexico | MF041389 | | - | |
| 21 | *H. benoiti* | Gulf of Mexico | MF041441 | | - | |
| 22 | *H. benoiti* | Gulf of Mexico | MF041559 | | - | |
| 23 | *H. benoiti* | Gulf of Mexico | MF041573 | | - | |
| 24 | *H. benoiti* | Gulf of Mexico | MF041579 | | - | |
| 25 | *M. muelleri* | Balearic Sea | KC616398 | | - | |
| 26 | *M. muelleri* | Balearic Sea | KC616399 | | - | |
| 27 | *M. muelleri* | Balearic Sea | KC616400 | | - | |
| 28 | *M. muelleri* | Balearic Sea | KC616401 | | - | |
| 29 | *M. muelleri* | Balearic Sea | KC616402 | | - | |
| 30 | *M. muelleri* | Balearic Sea | MT132274 | | Rees *et al.,* 2020 | |
| 31 | *M. muelleri* | Balearic Sea | MT132275 | | Rees *et al.,* 2020 | |
| 32 | *M. muelleri* | Balearic Sea | MT132276 | | Rees *et al.,* 2020 | |
| 33 | *M. muelleri* | Balearic Sea | MT132277 | | Rees *et al.,* 2020 | |
| 34 | *M. muelleri* | Balearic Sea | MT132279 | | Rees *et al.,* 2020 | |
| 35 | *M. muelleri* | Balearic Sea | MT132280 | | Rees *et al.,* 2020 | |
| 36 | *M. muelleri* | Balearic Sea | MT132281 | | Rees *et al.,* 2020 | |
| 37 | *M. muelleri* | Balearic Sea | MT132282 | | Rees *et al.,* 2020 | |
| 38 | *M. muelleri* | Balearic Sea | MT132283 | | Rees *et al.,* 2020 | |
| 39 | *M. muelleri* | Balearic Sea | MT132284 | | Rees *et al.,* 2020 | |
| 40 | *M. muelleri* | Sicily | KJ709557 | | Landi *et al.,* 2014 | |
| 41 | *M. muelleri* | Sicily | KJ709558 | | Landi *et al.,* 2014 | |
| 42 | *M. muelleri* | Levant Basin | - | BIM635-19 | - | |
| 43 | *M. muelleri* | Azores | MT132252 | | Rees *et al.,* 2020 | |
| 44 | *M. muelleri* | Azores | MT132262 | | Rees *et al.,* 2020 | |
| 45 | *M. muelleri* | Azores | MT132270 | | Rees *et al.,* 2020 | |
| 46 | *M. muelleri* | Azores | MT132278 | | Rees *et al.,* 2020 | |
| 47 | *M. muelleri* | Azores | MT132298 | | Rees *et al.,* 2020 | |
| 48 | *M. muelleri* | North Atlantic Ocean | EU148245 | | - | |
| 49 | *M. muelleri* | North Atlantic Ocean | EU148246 | | - | |
| 50 | *M. muelleri* | North Atlantic Ocean | EU148247 | | - | |
| 51 | *M. muelleri* | North Atlantic Ocean | KU958034 | | Rees *et al.,* 2017 | |
| 52 | *M. muelleri* | North Atlantic Ocean | KU958039 | | Rees *et al.,* 2017 | |
| 53 | *M. muelleri* | North Atlantic Ocean | MT132216 | | Rees *et al.,* 2020 | |
| 54 | *M. muelleri* | North Atlantic Ocean | MT132224 | | Rees *et al.,* 2020 | |
| 55 | *M. muelleri* | North Atlantic Ocean | MT132234 | | Rees *et al.,* 2020 | |
| 56 | *M. muelleri* | North Atlantic Ocean | MT132238 | | Rees *et al.,* 2020 | |
| 57 | *M. muelleri* | North Atlantic Ocean | MT132239 | | Rees *et al.,* 2020 | |
| 58 | *M. muelleri* | North Atlantic Ocean | MT132240 | | Rees *et al.,* 2020 | |

***Continued***

*Table S4 continued*

| AA | Species | Sampling Location | Genbank | BOLD | Reference | Comments |
|---|---|---|---|---|---|---|
| 59 | *M. muelleri* | North Atlantic Ocean | MT132241 | | Rees *et al.,* 2020 | |
| 60 | *M. muelleri* | North Atlantic Ocean | MT132242 | | Rees *et al.,* 2020 | |
| 61 | *M. muelleri* | North Atlantic Ocean | MT132243 | | Rees *et al.,* 2020 | |
| 62 | *M. muelleri* | North Atlantic Ocean | MT132244 | | Rees *et al.,* 2020 | |
| 63 | *M. muelleri* | North Atlantic Ocean | MT132245 | | Rees *et al.,* 2020 | |
| 64 | *M. muelleri* | North Atlantic Ocean | MT132246 | | Rees *et al.,* 2020 | |
| 65 | *M. muelleri* | North Atlantic Ocean | MT132247 | | Rees *et al.,* 2020 | |
| 66 | *M. muelleri* | North Atlantic Ocean | MT132248 | | Rees *et al.,* 2020 | |
| 67 | *M. muelleri* | North Atlantic Ocean | MT132249 | | Rees *et al.,* 2020 | |
| 68 | *M. muelleri* | North Atlantic Ocean | MT132250 | | Rees *et al.,* 2020 | |
| 69 | *M. muelleri* | North Atlantic Ocean | MT132251 | | Rees *et al.,* 2020 | |
| 70 | *M. muelleri* | North Atlantic Ocean | MT132253 | | Rees *et al.,* 2020 | |
| 71 | *M. muelleri* | North Atlantic Ocean | MT132308 | | Rees *et al.,* 2020 | |
| 72 | *M. muelleri* | Norway | KU958033 | | Rees *et al.,* 2017 | |
| 73 | *M. muelleri* | Norway | KU958038 | | Rees *et al.,* 2017 | |
| 74 | *M. muelleri* | Norway | MT132254 | | Rees *et al.,* 2020 | |
| 75 | *M. muelleri* | Norway | MT132255 | | Rees *et al.,* 2020 | |
| 76 | *M. muelleri* | Norway | MT132256 | | Rees *et al.,* 2020 | |
| 77 | *M. muelleri* | Norway | MT132257 | | Rees *et al.,* 2020 | |
| 78 | *M. muelleri* | Norway | MT132258 | | Rees *et al.,* 2020 | |
| 79 | *M. muelleri* | Norway | MT132259 | | Rees *et al.,* 2020 | |
| 80 | *M. muelleri* | Norway | MT132260 | | Rees *et al.,* 2020 | |
| 81 | *M. muelleri* | Norway | MT132261 | | Rees *et al.,* 2020 | |
| 82 | *M. muelleri* | Norway | MT132263 | | Rees *et al.,* 2020 | |
| 83 | *M. muelleri* | Norway | MT132264 | | Rees *et al.,* 2020 | |
| 84 | *M. muelleri* | Norway | MT132271 | | Rees *et al.,* 2020 | |
| 85 | *M. muelleri* | Norway | MT132272 | | Rees *et al.,* 2020 | |
| 86 | *M. muelleri* | Norway | MT132273 | | Rees *et al.,* 2020 | |
| 87 | *M. muelleri* | Norway | MT132304 | | Rees *et al.,* 2020 | |
| 88 | *M. muelleri* | Norway | MT132305 | | Rees *et al.,* 2020 | |
| 89 | *M. muelleri* | Norway | MT132306 | | Rees *et al.,* 2020 | |
| 90 | *M. muelleri* | Norway | MT132307 | | Rees *et al.,* 2020 | |
| 91 | *M. muelleri* | Norway | MT132309 | | - | |
| 92 | *M. muelleri* | Norway | MT132310 | | - | |
| 93 | *M. muelleri* | Norway | MT132311 | | - | |
| 94 | *M. muelleri* | Norway | MT132312 | | - | |
| 95 | *M. muelleri* | Norway | MT132313 | | - | |
| 96 | *M. muelleri* | Norway | - | NBMF265-17 | - | |
| 97 | *M. muelleri* | Norway | - | NBMF266-17 | - | |

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*Table S4 continued*

| AA | Species | Sampling Location | Genbank | BOLD | Reference | Comments |
|---|---|---|---|---|---|---|
| 98 | *M. muelleri* | Norway | - | NBMF267-17 | - | |
| 99 | *M. muelleri* | Norway | - | NBMF268-17 | - | |
| 100 | *M. muelleri* | Greenland | - | GLF028-13 | - | |
| 101 | *M. muelleri* | Greenland | - | GLF332-19 | - | |
| 102 | *M. muelleri* | Greenland | - | GLF333-19 | - | |
| 103 | *M. muelleri* | Greenland | - | GLF334-19 | - | |
| 104 | *M. muelleri* | Arctic Ocean | MT132223 | | Rees *et al.,* 2020 | |
| 105 | *B. glaciale* | Balearic Sea | KC616366 | | - | |
| 106 | *B. glaciale* | Turkey | HQ167646 | | - | |
| 107 | *B. glaciale* | North Atlantic Ocean | EU148097 | | - | |
| 108 | *B. glaciale* | North Atlantic Ocean | EU148098 | | - | |
| 109 | *B. glaciale* | Norway | - | DSFIB492-13 | - | |
| 110 | *B. glaciale* | Norway | - | NBMF180-16 | - | |
| 111 | *B. glaciale* | Norway | - | NBMF278-17 | - | |
| 112 | *B. glaciale* | Norway | - | NBMF279-17 | - | |
| 113 | *B. glaciale* | Norway | - | NBMF280-17 | - | |
| 114 | *B. glaciale* | Canada | - | CMNAF078-06 | - | |
| 115 | *B. glaciale* | Canada | - | SCAFB502-07 | - | |
| 116 | *B. glaciale* | Canada | - | SCAFB510-07 | - | |
| 117 | *B. glaciale* | Canada | - | SCAFB856-07 | - | |
| 118 | *B. glaciale* | Canada | - | SCAFB857-07 | - | |
| 119 | *B. glaciale* | Canada | - | SCFAD104-09 | - | |
| 120 | *B. glaciale* | Canada | - | SCFAD105-09 | - | |
| 121 | *B. glaciale* | Canada | KY033571 | | Kenchington *et al.,* 2017 | |
| 122 | *B. glaciale* | Canada | KY033572 | | Kenchington *et al.,* 2017 | |
| 123 | *B. glaciale* | Greenland | - | DSFIB674-15 | - | |
| 124 | *B. glaciale* | Greenland | - | DSFIB720-16 | - | |
| 125 | *B. glaciale* | Greenland | - | GLF025-13 | - | |
| 126 | *B. glaciale* | Arctic Ocean | - | DSFIB493-13 | - | |
| 127 | *B. glaciale* | Arctic Ocean | - | DSFIB494-13 | - | |