Supplementary material

**Table S1.** Collection date, locality and geographic coordinates of specimens used in present study

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Specimen | Collection Date | Deep (m) | W (g) | TL (cm) | Latitude | Longitude | Locality | Species |
| OC01 | 04/11/2017 | 70 | 400 | 25 | 55º06'837s | 66º29'866w | Beagle Channel | *Enteroctopus megalocyathus* |
| OC02 | 04/11/2017 | 65 | 250 | 15 | 55º07'839s | 66º31'658w | Beagle Channel | *Enteroctopus megalocyathus* |
| OC03 | 05/11/2017 | 68,9 | 1300 | 30 | 55º07'202s | 66º37'289w | Beagle Channel | *Enteroctopus megalocyathus* |
| OC04 | 06/11/2017 | 94,6 | 1000 | 35 | 55º03'436s | 66º45'500w | Beagle Channel | *Enteroctopus megalocyathus* |
| OC05 | 07/11/2017 | 71,5 | 900 | 20 | 55º07'361s | 66º33'148w | Beagle Channel | *Enteroctopus megalocyathus* |
| OC06 | 10/11/2017 | 74,5 | 100 | 10 | 55º07'060s | 35º50'520w | Beagle Channel, Nueva Island | *Muusoctopus eureka* |
| OC07 | 14/11/2017 | 112 | 700 | 15 | 55º00'495s | 66º49'450w | Beagle Channel, Picton Island | *Enteroctopus megalocyathus* |
| OC08 | 14/11/2017 | 113 | 100 | 7 | 55º00'330s | 66º51'050w | Beagle Channel, Picton Island | *Muusoctopus eureka* |
| OC09 | 14/11/2017 | 115 | 300 | 10 | 54º59'550s | 66º51'160w | Beagle Channel, Picton Island | *Muusoctopus eureka* |
| OC10 | 15/11/2017 | 73,6 | 1000 | 20 | 55º06'570s | 66º35'570w | Beagle Channel, Nueva Island | *Enteroctopus megalocyathus* |
| OC11 | 15/11/2017 | 76,1 | 1200 | 25 | 55º06'490s | 66º29'060w | Beagle Channel, Nueva Island | *Enteroctopus megalocyathus* |
| OC12 | 16/11/2017 | 72,4 | 300 | 7 | 55º07'270s | 66º33'280w | Beagle Channel, Nueva Island | *Muusoctopus eureka* |
| OC13 | 22/11/2017 | 68,6 | 400 | 15 | 55º07'490s | 66º31'420w | Beagle Channel, Nueva Island | *Muusoctopus eureka* |
| OC14 | 24/11/2017 | 200 | 1000 | 13 | 54º56'170s | 69º13'190w | Beagle Channel | *Enteroctopus megalocyathus* |
| OC15 | 25/11/2017 | 180 | 900 | 10 | 54º56'140s | 69º13'450w | Beagle Channel | *Enteroctopus megalocyathus* |
| OC16 | 29/11/2017 | 69,9 | 400 | 15 | 55º07'020s | 66º27'130w | Beagle Channel, Nueva Island | *Muusoctopus eureka* |
| OC17 | 29/11/2017 | 67,6 | 1000 | 30 | 55º06'510s | 66º37'200w | Beagle Channel, Nueva Island | *Enteroctopus megalocyathus* |
| OC18 | 29/11/2017 | 71,8 | 200 | 7 | 55º07'070s | 66º36'520w | Beagle Channel, Nueva Island | *Enteroctopus megalocyathus* |
| OC19 | 29/11/2017 | 94,5 | 2000 | 40 | 54º56'120s | 69º14'170w | Beagle Channel | *Enteroctopus megalocyathus* |
| OC20 | 29/11/2017 | 98,4 | 1700 | 35 | 54º56'080s | 69º14'500w | Beagle Channel | *Enteroctopus megalocyathus* |
| OC21 | 30/11/2017 | 83,2 | 2200 | 60 | 54º56'060s | 69º15'100w | Beagle Channel | *Enteroctopus megalocyathus* |
| OC22 | 30/11/2017 | 80,7 | 2000 | 40 | 54º55'300s | 69º17'590w | Beagle Channel | *Enteroctopus megalocyathus* |
| OC23 | 30/11/2017 | 60,1 | 1300 | 30 | 54º55'090s | 69º19'420w | Beagle Channel | *Enteroctopus megalocyathus* |
| OC24 | 01/12/2017 | 227 | 1500 | 33 | 54º54'380s | 69º22'570w | Beagle Channel, Nueva Island | *Enteroctopus megalocyathus* |
| OC25 | 03/12/2017 | 70 | 600 | 30 | 55º07'180s | 66º32'180w | Beagle Channel, Nueva Island | *Enteroctopus megalocyathus* |
| OC26 | 03/12/2017 | 54,8 | 2000 | 75 | 55º03'580s | 66º44'280w | Beagle Channel, Nueva Island | *Enteroctopus megalocyathus* |
| OC27 | 04/12/2017 | 122,6 | 1500 | 50 | 55º03'160s | 66º46'240w | Beagle Channel, Reparo Island | *Enteroctopus megalocyathus* |
| OC28 | 08/12/2017 | 31,7 | 1300 | 40 | 55º03'390s | 66º47'550w | Beagle Channel | *Enteroctopus megalocyathus* |
| OC29 | 08/12/2017 | 88,3 | 1500 | 50 | 55º03'340s | 66º45'380w | Beagle Channel | *Enteroctopus megalocyathus* |
| OC30 | 09/12/2017 | 41 | 1400 | 50 | 55º04'100s | 66º46'350w | Beagle Channel | *Enteroctopus megalocyathus* |
| OC31 | 09/12/2017 | 40,7 | 1100 | 45 | 55º04'000s | 66º46'390w | Beagle Channel | *Enteroctopus megalocyathus* |
| OC32 | 09/12/2017 | 38 | 2400 | 60 | 55º03'530s | 66º46'550w | Beagle Channel | *Enteroctopus megalocyathus* |
| OC33 | 09/12/2017 | - | - | - | - | - | Beagle Channel | *Enteroctopus megalocyathus* |
| OC34 | 27/03/2018 | - | - | - | - | - | Border Coast, Seco River | *Enteroctopus megalocyathus* |

**Table S2.** Variable sites among haplotypes of 16S rRNA of *Enteroctopus megalocyathus* (16SH1,16SH3-16SH5), *E. magnificus* (16SH2), and *E. zealandicus* (16SH1).

|  |  |
| --- | --- |
|  | **Variable nucleotide site positions** |
| **Haplotypes** | **58** | **176** | **197** | **239** | **240** | **254** | **257** | **349** | **461** | **465** | **n** |
| 16SH1 | A | T | A | T | A | T | T | T | T | T | 37 |
| 16SH2 | . | - | G | - | G | - | - | - | . | . | 1 |
| 16SH3 | G | . | . | . | . | . | . | . | . | . | 1 |
| 16SH4 | . | . | . | . | . | . | . | . | A | A | 1 |
| 16SH5 | G | . | . | . | . | . | . | . | A | A | 1 |

**Table S3.** Variable sites among haplotypes of COI of *Enteroctopus megalocyathus* (COIH1 and COIH2) and *E. zealandicus* (COIH1 and COIH3).

|  |  |
| --- | --- |
| **Haplotypes** | **Variable nucleotide site position** |
| **5** | **390** | **n** |
| COIH1 | C | C | 37 |
| COIH2 | . | T | 1 |
| COIH3 | T | . | 1 |

**Table S4.** Variable sites among six haplotypes of COIII of *Enteroctopus megalocyathus* (COIIIH1-COIIIH6) and three of *E. zealandicus* (COIIIH7-COIIIH9).

|  |  |  |  |
| --- | --- | --- | --- |
| **Haplotypes** |  | **Variable nucleotide site position** | **n** |
| **9** | **10** | **117** | **144** | **199** | **244** | **246** | **249** | **250** | **252** | **253** | **339** | **390** |
| COIIIH1 | C | G | G | T | G | T | A | T | C | A | G | T | C | 29 |
| COIIIH2 | . | . | . | . | . | . | . | . | . | . | . | A | . | 1 |
| COIIIH3 | T | . | A | C | . | . | . | . | . | . | . | . | T | 1 |
| COIIIH4 | . | . | . | . | A | . | . | . | . | . | . | . | . | 1 |
| COIIIH5 | . | . | . | . | A | C | T | A | T | C | A | . | . | 1 |
| COIIIH6 | . | . | . | . | . | C | T | A | T | C | A | . | . | 2 |
| COIIIH7 | . | . | . | C | . | . | . | . | . | . | . | . | . | 2 |
| COIIIH8 | . | A | . | . | . | . | . | . | . | . | . | . | . | 2 |
| COIIIH9 | . | A | . | C | . | . | . | . | . | . | . | . | . | 1 |

**Table S5.** Genetic diversity parameters of several species of mollusks from South America and the Magellanic province.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Taxa** |  |  | **bp** |  |
| **Gen** | **N** | ***K*** | **S** | ***π*** | **Hd** | **Tajima´s** **D** | **Fu’s** ***F*** | **Reference** |
| Nacella edgari | COI | 101 | 658 | 20 | 19 | 0.0018 | 0.750 | -1.92\* | -16.013\*\*\* | González-Wevar et al., 2016 |
| *N. concinna* | COI | 89 | 658 | 12 | 11 | 0.0012 | 0.0627 | -1.84\* | -8.07\*\*\* | González-Wevar et al., 2016 |
| *N. magellanica* | COI | 97 | 658 | 25 | 28 | 0.0022 | 0.714 | -2.24\*\* | -24.33\*\*\* | González-Wevar et al., 2016 |
| *N. delesserti* | COI | 89 | 658 | 5 | 4 | 0.0005 | 0.345 | 1.23\*  | -2,73\*\*  | González-Wevar et al., 2016 |
| *N. mytilina* | COI | 300 | 688 | 19 | 26 | 0.0014 | 0.481 | -2.11\*\* | -13.49\*\*\* | González-Wevar et al., 2016a |
| *Octopus mimus* | COIII | 197 | 597 | 13 | 14 | 0.002 | 0.609 | -1.61\* | -4.02\* | Pardo-Gandarillas *et al.*, 2018 |
| *Enteroctopus megalocyathus* | COI | 33 | 600 | 2 | 1 | 0.0001 | 0.06 | -1.1401ns | -1.2903ns | Present study |
| *E. megalocyathus* | COIII | 35 | 455 | 6 | 12 | 0.003 | 0.32 | -1.68\* | -0.5280ns | Present study |

N, number of individuals; bp, base pairs. Diversity values are represented by overall values, K, number of haplotypes; S, number of segregating sites; *π*, nucleotide diversity; Hd, haplotype diversity. \*p< 0.05, \*\*p< 0.01, \*\*\*p< 0.001.