

Supplementary material S2

SPECIES PARTITION ANALYSIS

1) ABGD Samples species partition based on the Automatic Barcode Gap Discovery

| Group | N | Sample ID | Species |
|-------------|----|--|--|
| Group[1] | 12 | MNA-07967 MNA-07964 MNA-05759 MNA-08184 MNA-09159 MNA-06513 MNA-08182 MNA-08183 MNA-03766 MNA-03855 MNA-03795 MNA-03760 | <i>Notocrinus virilis</i> Mortensen, 1917 |
| Group[2] | 6 | MNA-05491 MNA-06108 MNA-05755 MNA-07965 MNA-10419 MNA-07947 | <i>Anthometrina adriani</i> (Bell, 1908) |
| Group[3] | 1 | MNA-08074 | <i>Florometra mawsoni</i> AH Clark, 1937 |
| Group[4] | 1 | MNA-06514 | <i>Promachocrinus kerguelensis</i> Carpenter, 1879 |
| Group[5] | 2 | MNA-05676 MNA-07963 | <i>Promachocrinus kerguelensis</i> Carpenter, 1879 |
| Group[6] | 3 | MNA-08435 MNA-08447 MNA-08448 | <i>Antrechinus sp.</i> |
| Group[7] | 1 | MNA-08451 | <i>Sterechinus antarcticus</i> Koehler, 1901 |
| Group[8] | 13 | MNA-08464 MNA-02886 MNA-10574 MNA-02885 MNA-03576 MNA-03577 MNA-08462 MNA-08463 MNA-08465 MNA-08466 MNA-08468 MNA-08469 MNA-08470 | <i>Sterechinus neumayeri</i> (Meissner, 1900) |
| Group[9] | 1 | MNA-09365 | <i>Ctenocidaris sp.</i> |
| Group[10] | 12 | MNA-08564 MNA-08457 MNA-04500 MNA-04497 MNA-00577 MNA-02896 MNA-04498 MNA-04499 MNA-05748 MNA-08478 MNA-08479 MNA-08480 | <i>Abatus (Pseudabatus)</i> <i>nimrodi</i> (Koehler, 1911) |
| Group[11] | 3 | MNA-08436 MNA-084311 MNA-08437 | <i>Brachysternaster chesheri</i> Larrain, 1985 |
| Group[12] | 4 | MNA-05905 MNA-08185 MNA-08432 MNA-08433 | <i>Abatus cordatus</i> (Verrill, 1876) + <i>Anthometrina</i> <i>adriani</i> (Bell, 1908) |
| Group[13] | 2 | MNA-05746 MNA-08492 | <i>Abatus ingens</i> Koehler, 1926 |
| Group[14] | 2 | MNA-03454 MNA-08446 | <i>Abatus curvidens</i> Mortensen, 1936 |
| Group[15] | 27 | MNA-02937 MNA-08489 MNA-08491 MNA-05747 MNA-00573 MNA-08486 MNA-08495 MNA-08476 MNA-08471 MNA-08475 MNA-08488 MNA-08494 MNA-08565 MNA-08490 MNA-08493 MNA-08485 MNA-08483 MNA-02897 MNA-03439 MNA-08449 MNA-08472 MNA-08473 MNA-08474 MNA-08484 MNA-08487 MNA-08496 MNA-08497 | <i>Abatus shackletoni</i> Koehler, 1911 |
| Group[16] | 1 | MNA-08430 | <i>Abatus cavernosus</i> (Philippi, 1845) |
| Group[17] | 1 | MNA-08434 | <i>Abatus sp.</i> |

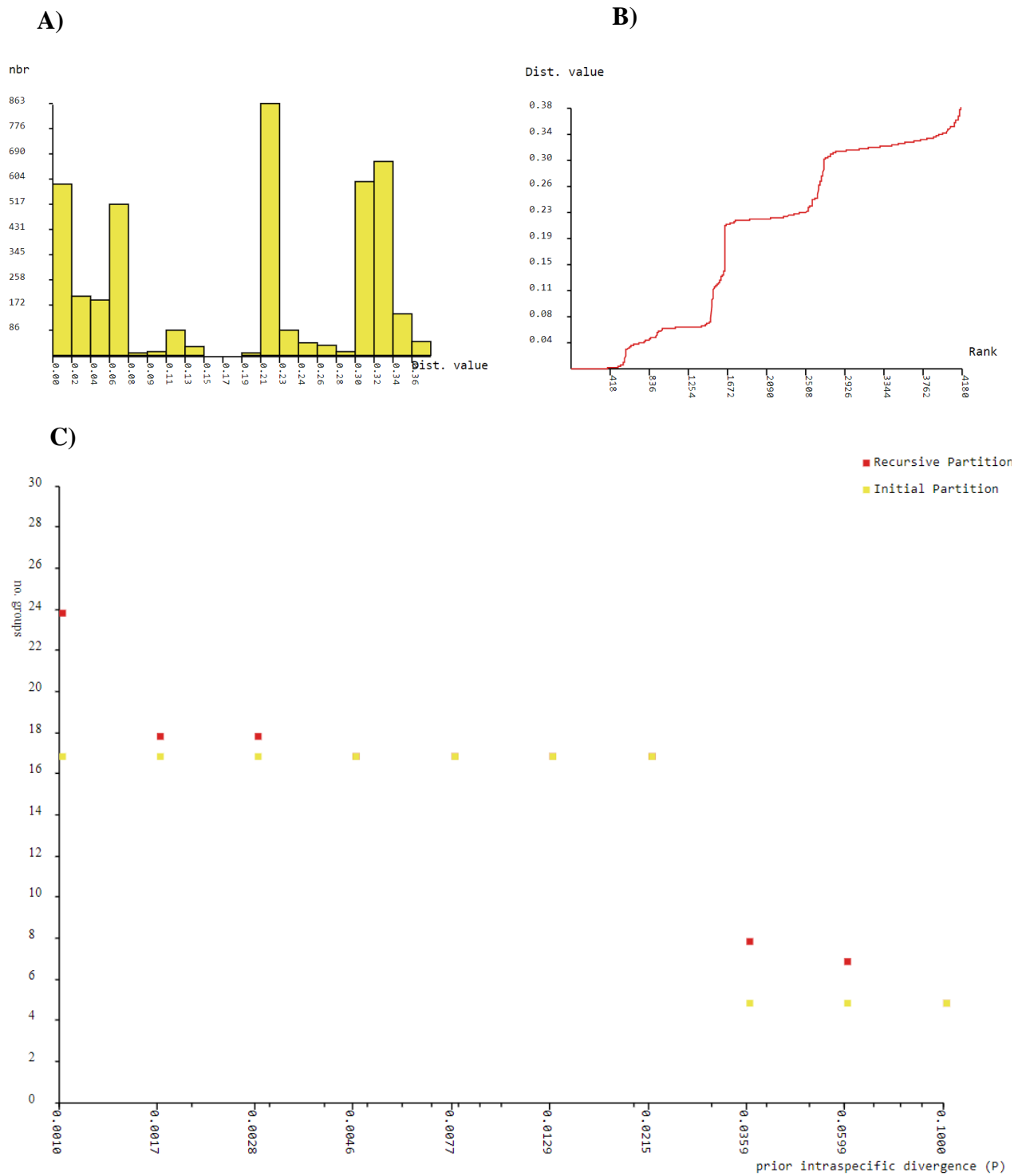


Figure 1 - ABGD graphical web results. **(A)** Histogram of distances; **(B)** Ranked pairwise difference and **(C)** Final species partitions.

2) bPTP

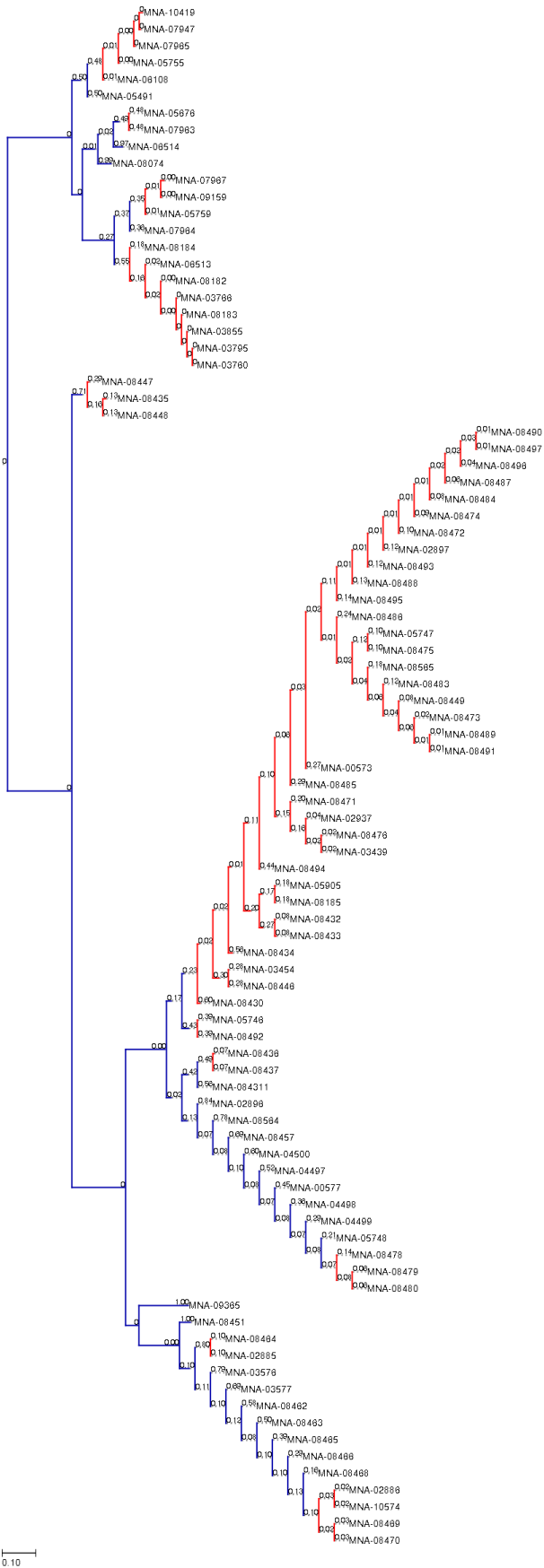


Figure S2 - Graphical output of species partition in PTP.

3) BIN

Samples species partition and associated BOLD BIN. Species occurrence is reported for AP= Antarctic Peninsula, TNB= Terra Nova Bay, CH=Cape Hallett, MB= Mawson Bank, BS= Bransfield Strait, WS= Weddell Sea. Abbreviations: barcode index number (BIN).

| Class | BIN | Family | Species | Sample | TNB | BS | WS | CH | MB |
|------------|---------|---|---|---|-----|----|----|----|----|
| Crinoidea | AAA1563 | Antedonidae | <i>Anthometrina adriani</i> (Bell, 1908) | MNA 05491, MNA 05755, MNA 06108, MNA 07947, MNA 07965, MNA 10419 | x | | | | |
| | AAA1561 | | <i>Florometra mawsoni</i> AH Clark, 1937 | MNA 08074 | x | | | | |
| | AAA0604 | | <i>Promachocrinus kerguelensis</i> Carpenter, 1879 | MNA 05676, MNA 06514, MNA 07963 | x | | | | |
| | ACE8430 | Notocrinidae | <i>Notocrinus virilis</i> Mortensen, 1917 | MNA 03760, MNA 03766, MNA 03795, MNA 03855, MNA 05759, MNA 06513, MNA 07964, MNA 07967, MNA 08182, MNA 08183, MNA 08184, MNA 09159 | x | | | | |
| Echinoidea | AAC5708 | Ctenocidaridae | <i>Ctenocidaris sp.</i> | MNA 09365 | | | | x | |
| | AAC4674 | Echinidae | <i>Sterechinus antarcticus</i> Koehler, 1901 | MNA 08451 | | | | | x |
| | AAD4804 | | <i>Sterechinus neumayeri</i> (Meissner, 1900) | MNA 02885, MNA 02886, MNA 03576, MNA 03577, MNA 08462, MNA 08463, MNA 084624, MNA 08465, MNA 08466, MNA 08468, MNA 08469, MNA 08470, MNA 10574 | x | | | | |
| | AAL7860 | Paleopneustina <i>incertae sedis</i> B | <i>Brachysternaster chesheri</i> Larrain, 1985 | MNA 08431 | | x | | | |
| | AAC7471 | Schizasteridae | <i>Abatus (Pseudabatus) nimrodi</i> (Koehler, 1911) | MNA 00577, MNA 02896, MNA 04497, MNA 04498, MNA 04499, MNA 04500, MNA 05748, MNA 08457, MNA 08478, MNA 08479, MNA 08480, MNA 08564 | x | | | | |
| | AAH9048 | | <i>Abatus agassizii</i> Mortensen, 1910 | MNA 08432, MNA 08433 | | | x | | |
| | ABZ5633 | | <i>Abatus cavernosus</i> (Philippi, 1845) | MNA 08430 | | | x | | |
| | ABY5800 | | <i>Abatus cordatus</i> (Verrill, 1876) | MNA 05905, MNA 08185 | x | | | | |
| | AAH9046 | | <i>Abatus curvidens</i> Mortensen, 1936 | MNA 03454, MNA 08446 | x | | | | |
| | AAC8452 | | <i>Abatus ingens</i> Koehler, 1926 | MNA 05746, MNA 08492 | x | | | | |
| | AAH9047 | | <i>Abatus shackletoni</i> Koehler, 1911 | MNA 00573, MNA 02897, MNA 02937, MNA 03439, MNA 05747, MNA 08449, MNA 08471, MNA 08472, MNA 08473, MNA 08474, MNA 08475, MNA 08476, MNA 08483, MNA 08484, MNA 08485, MNA 08486, MNA 08487, MNA 08488, MNA 08489, MNA 08490, MNA 08491, MNA 08493, MNA 08494, MNA 08495, MNA 08496, MNA 08497, MNA 08565 | x | | | x | |
| | ADF6219 | | <i>Abatus sp.</i> | MNA 08434 | | | x | | |
| | AAL7859 | Urechinidae | <i>Antrechinus sp.</i> | MNA 08435, MNA 08447, MNA 08448 | | x | | | |