SUPPLEMENTARY MATERIAL 1

CSI – Cuttlefish Sepion Investigation: overview of cuttlebones found on Aotearoa New Zealand shores and analysis of predation and scavenging marks

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The information presented herein provides more details of the analysed material and methodology, as well as additional results that complement the main text.

1. MATERIAL & METHODS

1.1. Material studied

All the studied specimens, as well as additional sources of data are listed below. Museum acronyms are as follows: AWMM, Auckland War Memorial Museum (Auckland, New Zealand); CM, Canterbury Museum (Christchurch, New Zealand); GNS, GNS Science (Lower Hutt, New Zealand); NIWA, National Institute of Water and Atmospheric Research (Wellington, New Zealand); NMNZ, Museum of New Zealand Te Papa Tongarewa (Wellington, New Zealand); OM, Otago Museum (Dunedin, New Zealand); SMAG, Southland Museum and Art Gallery (Invercargill, New Zealand).

1.1.1. Specimen data

Below are listed all museum specimens analysed for the present work and their collection information, including GenBank registration numbers when applicable. Specimens with 'no further data' are presumed to have been found in New Zealand. No specimens could be found in the collection of NIWA. Photographs of the specimens are available in the Supplementary Material 2.

***Sepia apama* Gray, 1849:** AWMM MA126095 (Auckland, Muriwai Beach, 29 km along the beach; A.W.B. Powell col. ix/1948), GenBank MZ934380; CM M5553 (Canterbury, New Brighton; pres. Miss Bellwood); CM M5555 (Wellington, Waikanae); NMNZ M.016880 (Otago, Dunedin, Tomahawk Beach; F. Bruce col. 1963); M.032420 (Wellington, Paekakariki Beach; P. Collins col. 08/xi/1973); NMNZ M.330266 (Wellington, Peka Peka Beach, 40°50.03'S 175°3.15'E; A.J.D.

Tennyson col. 29/iv/2020), GenBank MZ934375; NMNZ M.330267 (Wellington, Paraparaumu Beach, 40°52.67'S 174°59.47'E; A.J.D. Tennyson col. 06/v/2020), GenBank MZ934374; NMNZ M.330268 (Wellington, Peka Peka Beach, 40°49.28'S 175°3.70'E; A.J.D. Tennyson col. 01/v/2020), GenBank MZ934379; OM IV4869 (Southland, Colac Bay); SMAG E74.132 (Southland, Oreti Beach; x/1973, G. King & B. King leg.); SMAG 8366 (immature; no further data). ***Sepia* cf. *apama* Gray, 1849:** AWMM MA126096 (Waikato, Waikawau Bay; T.H. Race 09/iii/1975), GenBank MZ934373. **Likely *Sepia apama* Gray, 1849:** NMNZ M.010926 (Waikato, Kawhia Harbour; C.A. Fleming col. xii/1956); NMNZ M.330087 (Wellington, Waikanae Beach; A.J.D. Tennyson col. 27/iv/2002); NMNZ M.330090 (Wellington, Waikanae Beach; A.J.D. Tennyson col. 15/ix/2019); NMNZ M.330093 (Wellington, Te Horo Beach, 40°46.78'S 175°5.37'E; A.J.D. Tennyson col. 13/v/2020). ***Sepia grahami* A. Reid, 2001:** SMAG 8367 (no further data). **Possibly *Sepia latimanus* Quoy & Gaimard, 1832:** SMAG 8360 (Stewart Island, Mason Bay?; 1949–1959?). ***Sepia* sp.:** AWMM MA124201 (Auckland, Whatipu, west of Ninepin Rock; H.R. Grenfell & W.M. Blom col., 21/x/2017); AWMM MA126093 (Auckland, Muriwai Beach); AWMM MA126094 (Auckland, Muriwai Beach; A.W.B. Powell col. 07/xi/1920); CM M5554 (Canterbury, New Brighton; 11/vi/1892); CM unnumbered (no further data); GNS HS4205 (Bay of Plenty, Tauranga; ex H. Suter colln.); NMNZ M.009831 (Stewart Island, Easy Harbour; R.K. Dell col. 21/v/1956); NMNZ M.011229 (Northland, Spirits Bay; W.R.B. Oliver col. 26/xi/1916; ex Oliver colln.); NMNZ M.018735 (Wellington, Waikanae Beach, north of Waimeha Stream; 1955; ex Ponder colln.); NMNZ M.330086 (Wellington, Waikanae Beach; A.J.D. Tennyson col. 21/xii/2019); NMNZ M.330088 (Wellington, Waikanae Beach; A.J.D. Tennyson col. 03/x/2019); NMNZ M.330089 (Wellington, Peka Peka Beach, 40°48.42'S 175°4.33'E; A.J.D. Tennyson col. 11/v/2020); NMNZ M.330091 (Wellington, Waikanae Beach; A.J.D. Tennyson col. 15/ix/2019); NMNZ M.330092 (Wellington, Te Horo Beach, 40°46.78'S 175°5.37'E; A.J.D. Tennyson col. 13/v/2020); NMNZ M.330094 (Wellington, Pukerua Bay, 41°1.78'S 174°52.43'E; A.J.D. Tennyson col. 01/vi/2020); NMNZ M.330095 (Waikato, Raglan; A. Hamilton col. i/1912); NMNZ M.330096 (Kermadec Islands, Raoul Island, Denham Bay; E.B. Davidson col. viii/1937); NMNZ M.330099 (Wellington, Pukerua Bay, 41°1.80'S 174°52.78'E; A.J.D. Tennyson col. 01/vi/2020); NMNZ M.330269 (Wellington, Waikanae Beach; A.J.D. Tennyson col. 18/viii/2019); NMNZ M.330270 (Wellington, Waikanae Beach, 40°51.87'S 175°1.03'E; A.J.D. Tennyson col. 11/x/2018); NMNZ M.330638 (Wellington, Waikanae River estuary, 40°52.60'S 175°0.031E; A.J.D. Tennyson & S.G. Tennyson col. 01/x/2020); NMNZ M.330650 (Wellington, Otaki Beach, 40°43.97'S 175°6.731'E; A.J.D. Tennyson & S.G. Tennyson col. 30/ix/2020); NMNZ M.330651 (2 specimens; Wellington, Waikanae Beach, 40°40.02'S 175°0.781E; A.J.D. Tennyson col. 26/ix/2020); OM IV60442 (Southland, Riverton Beach; 2019); SMAG 8358 (Stewart Island, Mason Bay; 1949–1959?); SMAG 8359 (Stewart Island, Mason Bay?; 1949–1959?); SMAG 8361 (Stewart Island, Mason Bay?; 1949–1959?); SMAG 8362 (no further data); SMAG 8363 (no further data); SMAG 8364 (no further data).

1.1.2. Literature data

The following data were extracted from the literature and represents localities for which no voucher specimens are known. As we cannot confirm their identification, we treated all as ***Sepia* sp.:** Northland: North Cape, Waikuku Beach, 1932 (Powell, 1940, as *S. plangon*); Ninety Mile Beach

(Powell, 1979; as *S. apama*). Waikato: Mercury Bay, Whitianga (Dell, 1952, as *S. apama*, listed as being part of the AWMM collection, but not found).

1.1.3. iNaturalist data

The following data were extracted from the website iNaturalist (https://www.inaturalist.org) on 01/vii/2021. The identity of each record was confirmed by us. The entries are listed according to their internal iNaturalist observation numbers. Each iNaturalist observation number needs to be added to the end of the command "https://www.inaturalist.org/observations/" to become a functioning URL for accessing each observation on their website. Two records had their coordinates obscured and were not included on the map.

***Sepia apama* Gray, 1849:** 2823789 (Northland, Te Paki, Waikuku Beach, Te Kanakana Stream, -34.423538 173.011799; pjd1, 21/iii/2016). ***Sepia* sp.:** 3873138 (Auckland, Muriwai Beach, -36.69 174.33; heni, 13/viii/2016); 8938448 (Manawatu-Wanganui, Foxton Beach, -40.39212167 175.22574; arnim, 25/xi/2017); 14935608 (Auckland, Karekare Beach, -36.98891042 174.4709773; jacqui-nz, 29/vii/2018); 15967425 (Northland, Ninety Mile Beach, Oneroa a Tohe, -34.65171324 172.8721565; tangatawhenua, 27/viii/2018); 16120041 (Wellington, coordinates obscured; wild_wind, 25/vii/2018); 26484147 (Auckland, Huia, -36.99996543 174.5714708; jacqui-nz, 06/vi/2019); 26589745 (Taranaki, Ohawe Beach, -39.58683708 174.1954185; stbobservations, 08/vi/2019); 42292319 (Auckland, coordinates obscured; jacqui-nz, 16/iv/2020); 63618056 (Taranaki, New Plymouth, -39.06125382 174.0203546; commoncopper, 20/x/2020); 65483066 (Auckland, Waiheke Island, -36.7784665 175.0629461; mike-duke, 14/xi/2020); 68518525 (Manawatu-Wanganui, Foxton Beach, -40.46069333 175.2148233; arnim, 24/i/2021). **Problematica:** One iNaturalist record (60933858; Stewart Island, -46.9647033 167.7083475) shows two fresh-looking cuttlebones side by side belong to two different species: *Sepia smithi* Hoyle, 1885 and *Sepia pharaonis* Ehrenberg, 1831. However, the observation was made in retrospect: it was created on 27/x/2020, but refers to an observation from 27/xii/2010. It was flagged by the iNaturalist community as potentially not being natural. There are no further specimens or data to corroborate this observation.

1.1.4. Associated biota

Below are listed the specimens removed from recently collected cuttlebones, all housed in the NMNZ collections.

Cnidaria, *Obelia dichotoma* (Linnaeus, 1758): NMNZ CO.007142 (Wellington, Waikanae Beach; A.J.D. Tennyson col. 18/viii/2019; removed from cuttlebone specimen NMNZ M.330269); NMNZ CO.007143 (Wellington, Paraparaumu Beach, 40°52.67'S 174°59.47'E; A.J.D. Tennyson col. 06/v/2020; removed from cuttlebone specimen NMNZ M.330267). **Crustacea, *Lepas anatifera* Linnaeus, 1758:** NMNZ CR.025588 (Wellington, Peka Peka Beach, 40°50.03'S 175°3.15'E; A.J.D. Tennyson col. 29/iv/2020; removed from cuttlebone specimen NMNZ M.330266); NMNZ CR.025589 (Wellington, Peka Peka Beach, 40°49.28'S 175°3.70'E; A.J.D. Tennyson col. 01/v/2020; removed from cuttlebone specimen NMNZ M.330268); NMNZ CR.025590 (Wellington, Waikanae Beach; A.J.D. Tennyson col. 18/viii/2019; removed from cuttlebone specimen NMNZ M.330269).

1.1.5. Tissue samples

Below is listed the information regarding the AM specimens from which the tissue samples were obtained, including GenBank registration numbers.

***Sepia apama* Gray, 1849:** AM C.474138.002 (Australia, South Australia, Upper Spencer Gulf, -33.92 137.80; S. Donellan col., ix/2011), GenBank MZ934382; AM C474139.002 (Australia, South Australia, Upper Spencer Gulf, -33.92 137.80; S. Donellan col., ix/2011), GenBank MZ934384; AM C474140.002 (Australia, South Australia, Upper Spencer Gulf, -33.92 137.80; S. Donellan col. ix/2011), GenBank MZ934377; AM C.476607.003 (Australia, New South Wales, North Bondi, -33.88 151.28; A. Schnell col., 29/vi/2012), GenBank MZ934376; AM C476608.002 (Australia, New South Wales, Sydney, Cronulla, off Oak Park, -34.080261 151.195803; 28/vi/2012), GenBank MZ934381; AM C476613.003 (Australia, New South Wales, Sydney, Manly, off Fairy Bower, -33.8022 151.2917; A. Schnell col., 23/iii/2012), GenBank MZ934383; AM C.479177.001 (Australia, Western Australia, north of Bunker Bay, Geographe Bay, -33.5086 115.0439, A. Sampey col., 21/v/2007), GenBank MZ934378. ***Sepia* cf. *apama* Gray, 1849:** AM C479179.002 (Australia, Western Australia, Houtman Abrolhous Islands, off Pelsart Island, -28.7311 114.0444; A. Sampey col., 26/iv/2007), GenBank MZ934372. ***Sepia latimanus* Quoy & Gaimard, 1832:** AM C.476101.002 Timor-Leste, Dili; A. Reid col., 19/ix/2012), GenBank MZ934370; AM C.476101.003 (Timor-Leste, Dili; A. Reid col., 19/ix/2012), GenBank MZ934371.

1.1.6. Additional GenBank data

Below are listed the additional sequences extracted from GenBank and used in the phylogenetic analysis, with data on their collection locality when available.

***Octopus vulgaris* Cuvier, 1797:** AB052253. ***Sepia apama* Gray, 1849:** AB675092 (Australia, Gulf St Vincent); AP013073. ***Sepia latimanus* Quoy & Gaimard, 1832:** AB192338 (Japan, Okinawa, Makishi); AB430406 (Indonesia); AP013074; KF009663 (Philippines, Aurora, Region 3); LC552688 (Indonesia). ***Sepia officinalis* Linnaeus, 1758:** AB240155. ***Sepia pharaonis* Ehrenberg, 1831:** AB430408 (Taiwan, Taichung); AP013076; HM164538 (Iran, Gulf of Oman); HQ846093; LR777651.

1.2. Barcoding & phylogenetic analysis

1.2.1. DNA extraction

We removed a piece of the dorsal shield of the sepion, which is richer in organic compounds than the ventral chambered portion (Le Pabic et al. 2017), gently scrubbed it with bleach and washed it with distilled water to remove any surface contaminants. We also trialled the ventral carbonate portion of one specimen.

DNA extractions and polymerase chain reactions (PCRs) were set up in the ancient DNA laboratory of the NMNZ, which is physically isolated from where modern DNA and PCR products are handled. Potential contamination was monitored by the use of negative extraction and PCR controls. Sepion shield fragments were ground to a fine powder using a mortar and pestle. Mortar and pestles were scrubbed with detergent, followed by soaking in bleach and UV-sterilisation between

each use. DNA was extracted from the powdered material by incubation overnight at 55°C in 945 µl of 0.5 M EDTA (pH 8.0), 20 µl of 10% SDS, and 3 µl of 20 mg/ml Proteinase-K, followed by extraction of the supernatant using the DNEasy® Blood & Tissue Kit (Qiagen) using the manufacturer's instructions except that the final elution was in 35µl of Buffer AE.

For the ethanol-preserved tissue samples, the standard protocol of the DNEasy® Blood & Tissue Kit was followed.

1.2.2. PCR

PCR mix was done using 6 µl of MyTaq Red Mix (Bioline), 2 µl of 10% BSA (bovine serum albumin), 2 µl of molecular grade water, and 0.5 µl of each primer of the pair. PCR amplification steps were: initial denaturation at 95°C (5 min); followed by 35 cycles of denaturation at 94°C (40 s), annealing at 48°C (primer pair LCO and Ill_C_R) or 46°C (primer pair HCO and Ill_B_F) (1 min), and extension at 72°C (30 s); finishing with a final extension at 72°C (5 min). For the ethanol-preserved tissue samples, PCR settings were the same as above, with an annealing temperature of 48°C. All PCR products were quantified via agarose gel electrophoresis, cleaned with ExoSAP-IT™ (Affymetrix Inc.) and sent out for sequencing.

1.1.3. Phylogenetic analysis

Phylogenetic analyses were performed using PAUP* v.4.0b10 (by D. L. Swofford, Sinauer Associates, Sunderland, MA) with maximum parsimony (MP), the PhyML v.3.0 web server (http://www.atgc-montpellier.fr/phyml, accessed 26 August 2021; Guindon et al. 2010) with maximum likelihood (ML), and MrBayes v.3.2.7 (Huelsenbeck and Ronquist 2001) for Bayesian inference (BI).

The MP analysis was performed using a heuristic search algorithm with 100 random addition sequence replicates, and tree bisection reconnection (TBR) branch-swapping. Branch support was assessed using 1,000 bootstrap pseudoreplicates, each with 10 random addition replicates. For ML analysis the best-fit models of sequence evolution were determined with Smart Model Selection (GTR + I + G) and the Akaike information criterion (Lefort et al. 2017). A heuristic search was performed with 10 random addition sequence replicates and subtree-pruning-regrafting (SPR) branch-swapping. Branch support was assessed with 1,000 bootstrap pseudoreplicates. For BI, two concurrent analyses were run, each with four Markov chains of 10 million generations that were sampled every 1,000 generations, and with nst = 6, rates = invgamma and the default priors. Tracer v.1.7.1 (Rambaut et al. 2018) was used to confirm that stationarity had been reached and the first 25% of samples were discarded as 'burn-in'.

1.3. Mapping

Coordinates were estimated for the historical specimens and literature data (see Item 1.1 above) using Google Earth (Google LLC). The original and derived coordinates, can be seen in Table S1 below. The map was created using the QGIS software (v.3.8.1; QGIS Development Team 2019).

Table S1. Coordinates used for map and source of data. Derived coordinates are indicated in red font.

Specimen reg. nr.	Locality	Date	Species	Latitude	Longitude
AWMM MA124201	Whatipu, W of Ninepin Rock	21-Oct-2017	indet	-37.051507	174.496313
AWMM MA126093	Muriwai Beach		indet	-36.835209	174.426598
AWMM MA126094	Muriwai Beach	7-Nov-1920	indet	-36.835209	174.426598
AWMM MA126095	Muriwai Beach	Sep-1948	apama	-36.835209	174.426598
AWMM MA126096	Waikawau Bay	9-Mar-1975	cf. apama	-36.596376	175.524057
CM M5553	New Brighton		apama	-43.507014	172.731987
CM M5554	New Brighton	11-Jul-1892	indet	-43.507014	172.731987
CM M5555	Waikanae		apama	-40.862445	175.020263
GNS HS4205	Tauranga		indet	-37.631388	176.179277
NMNZ M.009831	Stewart Island, Easy Harbour	21-May-1956	indet	-47.154331	167.575796
NMNZ M.010926	Kawhia Harbour	Dec-1956	apama	-38.066120	174.822729
NMNZ M.011229	Spirits Bay	26-Nov-1916	indet	-34.426744	172.857749
NMNZ M.016880	Tomahawk Beach	16-May-1905	apama	-45.906346	170.539771
NMNZ M.018735	Waikanae Beach, N of Waimeha Stream	1955	indet	-40.864881	175.016419
NMNZ M.032420	Paekakariki Beach	8-Nov-1973	apama	-40.987436	174.949653
NMNZ M.330086	Waikanae Beach	21-Dec-2019	indet	-40.8608	175.0232
NMNZ M.330087	Waikanae Beach	27-Apr-2002	apama	-40.862911	175.019927
NMNZ M.330088	Waikanae Beach	3-Oct-2019	indet	-40.8608	175.0232
NMNZ M.330089	Peka Peka Beach	11-May-2020	indet	-40.8070	175.0722
NMNZ M.330090	Waikanae Beach	15-Sep-2019	apama	-40.8683	175.0108
NMNZ M.330091	Waikanae Beach	15-Sep-2019	indet	-40.8683	175.0108
NMNZ M.330092	Te Horo Beach	13-May-2020	indet	-40.779667	175.0895
NMNZ M.330093	Te Horo Beach	13-May-2020	apama	-40.779667	175.0895
NMNZ M.330094	Pukerua Bay	1-Jun-2020	indet	-41.0296	174.874
NMNZ M.330095	Raglan	Jan-1912	indet	-37.798048	174.883134
NMNZ M.330096	Raoul Island, Denham Bay	Aug-1937	indet	-29.261803	177.947682
NMNZ M.330099	Pukerua Bay	1-Jun-2020	indet	-41.0301	174.8798
NMNZ M.330266	Peka Peka Beach	29-Apr-2020	apama	-40.833833	175.0525
NMNZ M.330267	Paraparaumu Beach	6-May-2020	apama	-40.877833	174.991167
NMNZ M.330268	Peka Peka Beach	1-May-2020	apama	-40.821333	175.061667
NMNZ M.330269	Waikanae Beach	18-Aug-2019	indet	-40.862911	175.019927
NMNZ M.330270	Waikanae Beach	11-Oct-2018	indet	-40.8645	175.017167
NMNZ M.330638	Waikanae River estuary	1-Oct-2020	indet	-40.876667	175.0005
NMNZ M.330650	Otaki Beach	30-Sep-2020	indet	-40.732833	175.112167
NMNZ M.330651	Waikanae Beach	26-Sep-2020	indet	-40.667	175.013
OM IV4869	Colac Bay		apama	-46.364657	167.884354
OM IV60442	Riverton Beach	2019	indet	-46.363821	168.020552
SMAG 8358	Stewart Island, Mason Bay	1949–1959	indet	-46.922334	167.766400
SMAG E74.132	Oreti Beach	Oct-1973	apama	-46.438187	168.229323

Table S1. (cont.)

Literature	Locality	Date	Species	Latitude	Longitude
Dell (1952)	Mercury Bay, Whitianga		indet	-36.821842	175.701588
Powell (1940)	North Cape, Waikuku Beach	1932	indet	-43.287271	172.722328
Powell (1979)	Ninety Mile Beach		indet	-34.718693	172.928286
iNaturalist nr.	**Locality**	**Date**	**Species**	**Latitude**	**Longitude**
2823789	Waikuku Beach, Te Kanakana Stream	21-Mar-2016	apama	-34.423538	173.011799
3873138	Woodhill Forest	13-Aug-2016	indet	-36.69	174.33
8938448	Foxton Beach	25-Nov-2017	indet	-40.392122	175.225740
14935608	Karekare Beach	29-Jul-2018	indet	-36.988910	174.470977
15967425	Ninety Mile Beach	27-Aug-2018	indet	-34.651713	172.87216
26484147	Huia	06-Jun-2019	indet	-36.999965	174.571471
26589745	Ohawe Beach	08-Jun-2019	indet	-39.586837	174.19542
63618056	New Plymouth	20-Oct-2020	indet	-39.061254	174.020354
65483066	Waiheke Island	14-Nov-2020	indet	-36.778466	175.062946
68518525	Foxton Beach	24-Jan-2021	indet	-40.460693	175.214823

2. RESULTS

2.1. Associated biota

The gooseneck barnacles are *Lepas anatifera* Linnaeus, 1758 (Lepadidae), identified by their overall size and shape and yellow membranes (A. Hosie, pers. comm.). Individuals of this common species can have smooth or radially striated valves (Foster 1978) and both forms were present in our material.

The hydroid material was degraded, most likely due to the time spent out of the water on the beach before collection and preservation, however, the characters that remain clear appear to match the genus *Obelia* Péron & Lesueur, 1810, specifically and most likely *Obelia dichotoma* (Linnaeus, 1758) (Obeliidae). *Obelia* is a problematic taxon and there are many species described only from the polyp stage, resulting in many synonymies over the years and uncertainty in the taxonomic validity of some species (Schuchert 2021). *Obelia* medusae are common throughout the world, although no useful characteristics are so far known to distinguish them (Russel 1953; Bouillon and Barnett 1999; Vervoort and Watson 2003), adding to the taxonomic confusion. Diagnostic morphological characters of the polyp stage such as colony size, branching pattern, hydrotheca length, and pedicel rings are often intermediate or shared between species. Previous work has shown that these variations can be attributed to environmental variables such as flow rate and direction, nutrition, substrate, latitude, and water temperature (Ralph 1956; Cornelius 1975; Cunha et al. 2020). Phylogenetic studies of this species suggest several cryptic lineages with overlapping morphological characters (Cunha et al. 2017, 2020).

In our specimens, the hydrothecae were often not clearly visible due to the above reasons and were abraded, so the presence or absence of cusps could not be determined. Some specimens, where the hydrothecae were visible, showed them to be unusually long. Free medusae were not present in the sample. However, the shape and branching of the material agrees with the currently accepted

morphological description for *Obelia dichotoma* sensu lato. The colonies were sympodial, nearly straight, with monosiphonic stems rising from a stolonal, tubiform network attached to cuttlebone surface. This material did not appear to have any polysiphonic stems. The perisarc was of a yellow-brown colour in sample NMNZ CO.007142, and light yellow to colourless in sample NMNZ CO.007143. The hydrocaulus was irregularly branched, with slightly curved internodes that had about two or three annulations basally. Hydrothecae were on a pedicel with about 10 annulations, often interrupted in the middle with a smooth part, arising from branches. Gonothecae were on a pedicel with about three to five annulations, more than twice as long as hydrotheca, and were elongated and conical in shape widening towards a ring-shaped aperture on a low collar.

Furthermore, the dorsal shield sample we took from cuttlebone specimen AWMM MA124201 for DNA extraction was not entirely scrubbed clean of contaminants, and we accidentally acquired DNA from dry hydroid fragments. The resulting COI sequence (GenBank number MZ052083) has excellent Phred Quality Scores (30–40) and, when compared to GenBank data, resulted in 98% identity with a specimen of *Obelia dichotoma* from Hawaii (MW277711). Identity to other *Obelia* spp. COI sequences in GenBank ranged from 88 to 93% among the following species: *O. bidentata* Clark, 1875, *O. geniculata* (Linnaeus, 1758), and *O. longissima* (Pallas, 1766).

3. REFERENCES

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