

SUPPLEMENTARY MATERIALS

Battaglia et al. - How rare are Argonautoidea octopuses in the Mediterranean? New data from stranding events, stomach contents and genetics.

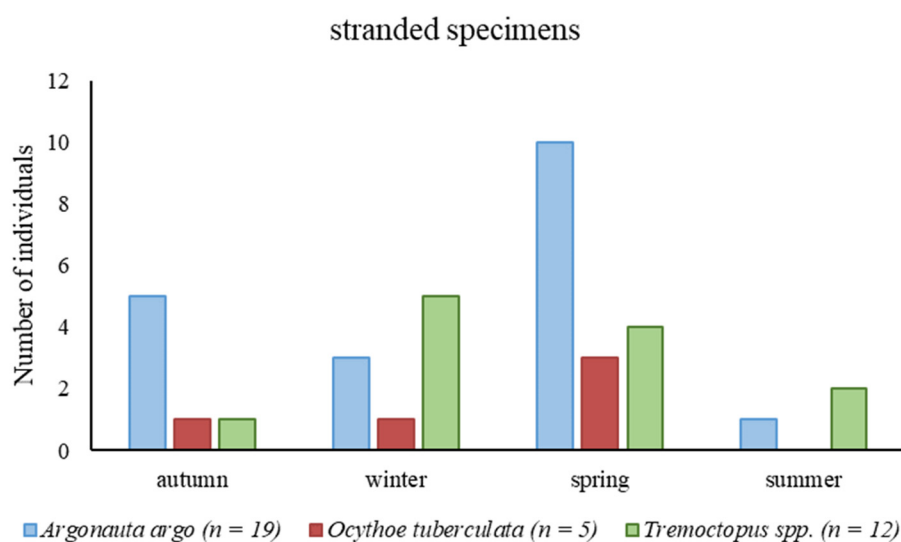


Figure S1. Number of stranded specimens of *Argonauta argo*, *Ocythoe tuberculata* and *Tremoctopus violaceus* for each season.

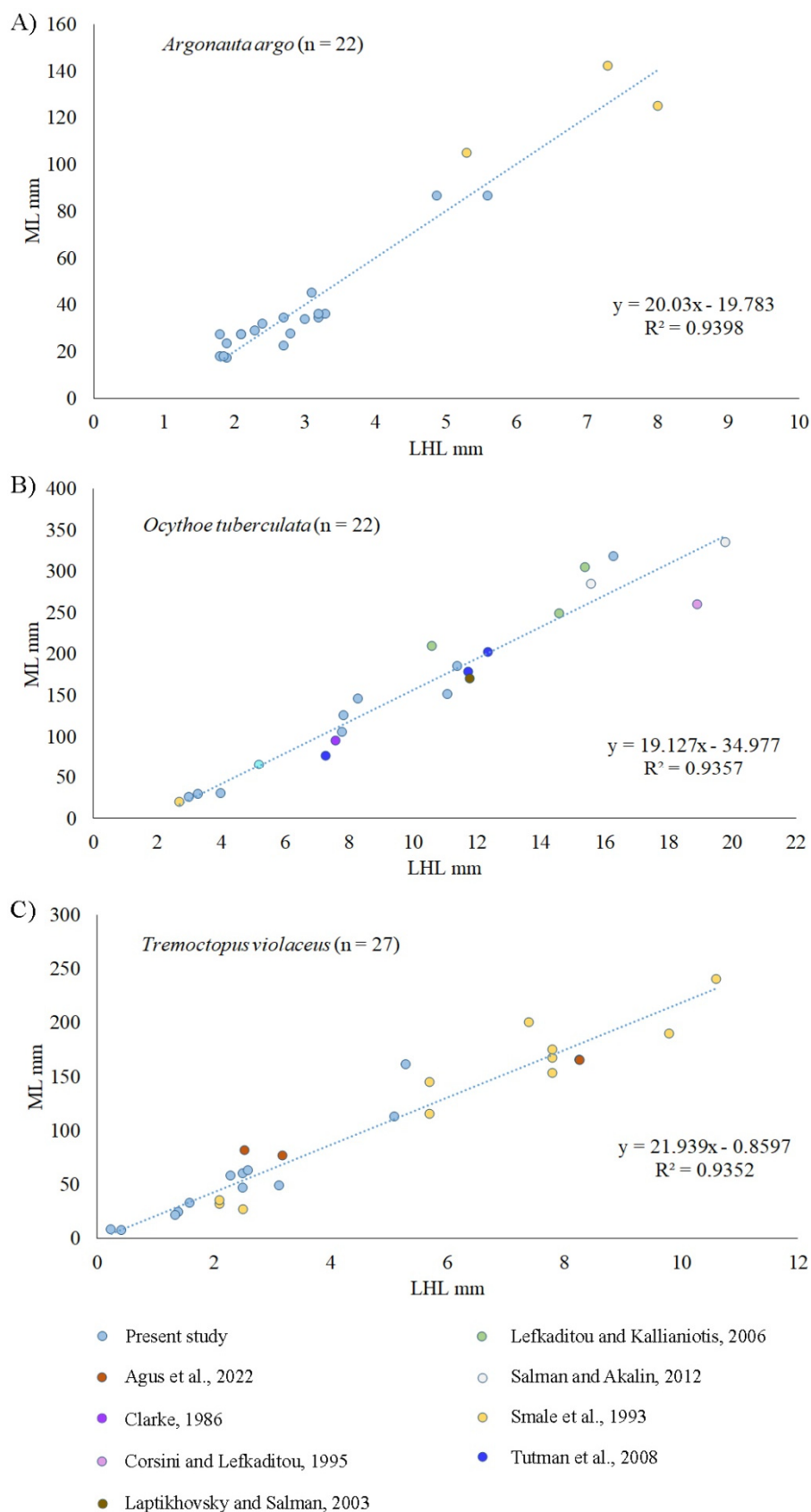


Figure S2. Relationship between beak size (lower hood length LHL) and mantle length (ML) in *Argonauta argo* (A), *Ocythoe tuberculata* (B) and *Tremoctopus violaceus* (C).

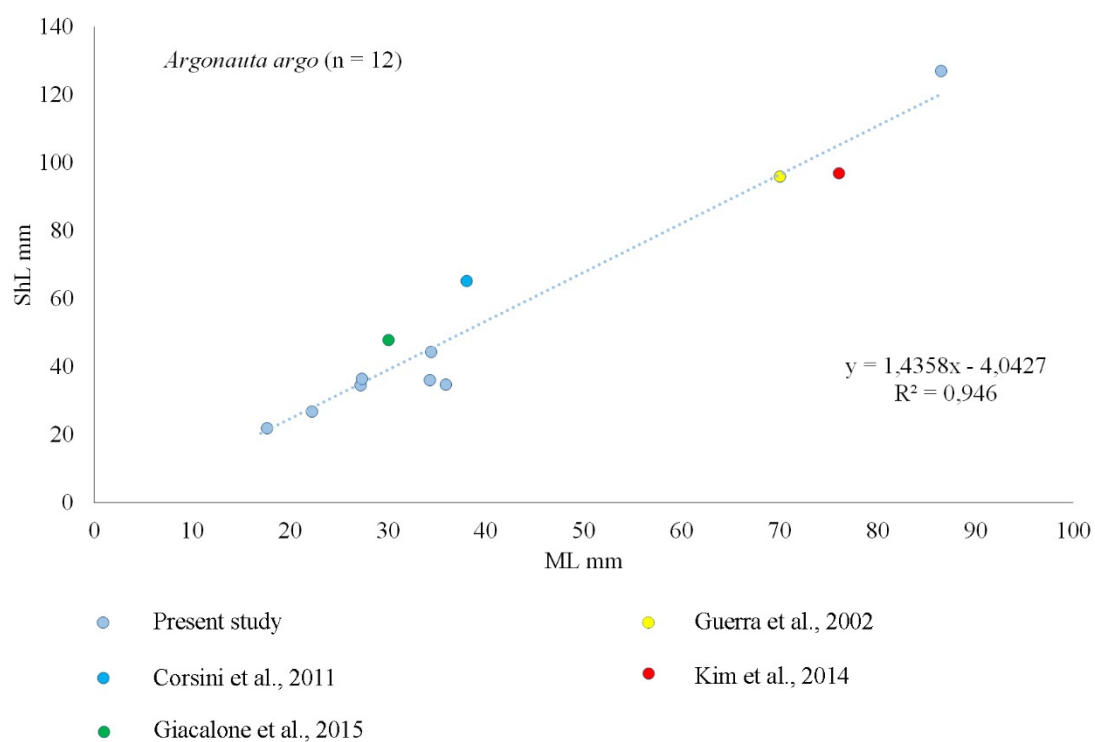


Figure S3. Relationship between shell length (ShL) and dorsal mantle length for *Argonauta argo*.

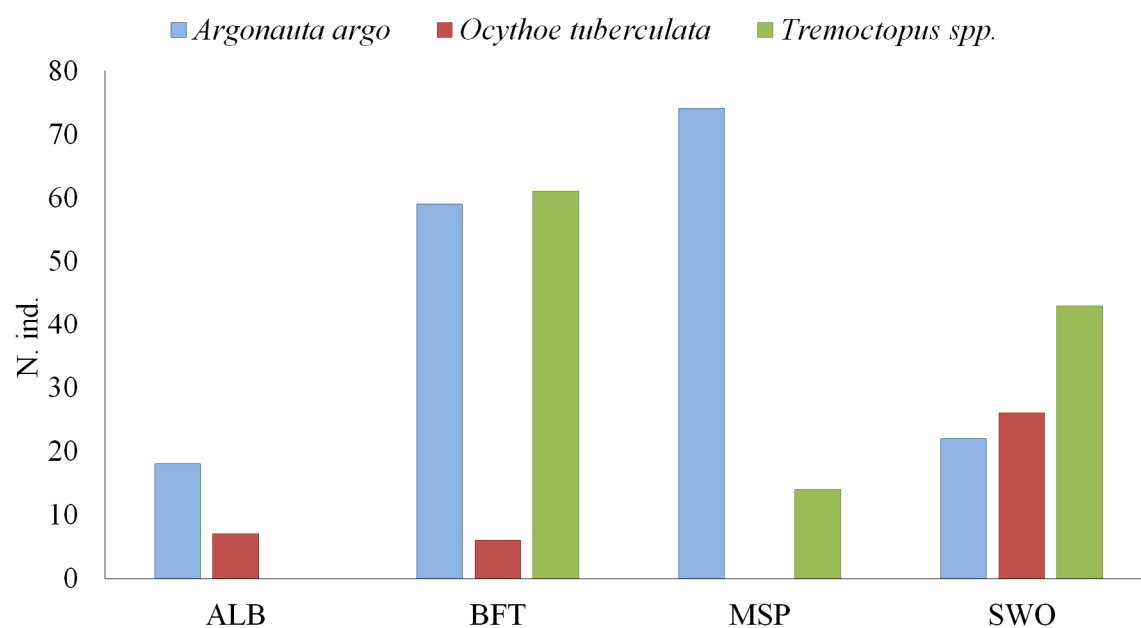


Figure S4. Number of cephalopod Argonautaidea found in the stomachs of pelagic predators (ALB = albacore; BFT = bluefin tuna; MSP = Mediterranean spearfish; SWO = swordfish)

Table S1. List of fresh Argonautoidea specimens collected.

Species	Code	Area	Date	ML mm	Sex
<i>Argonauta argo</i>	AA 001	Strait of Messina	24/03/2009	31.6	F
	AA 002	Strait of Messina	16/11/2008	23.2	F
	AA 003	Strait of Messina	19/05/2010	27.2	F
	AA 004	Strait of Messina	19/05/2010	27.3	F
	AA 005	Strait of Messina	05/03/2011	86.4	F
	AA 006	Strait of Messina	28/10/2011	86.5	F
	AA 007	Strait of Messina	10/11/2012	27.6	F
	AA 008	Strait of Messina	03/04/2012	45.1	F
	AA 009	Strait of Messina	06/07/2012	34.4	F
	AA 010	Strait of Messina	20/06/2019	17	F
	AA 011	Strait of Messina	06/05/2020	17.8	F
	AA 012	Strait of Messina	19/01/2014	27.3	F
	AA 013	Strait of Messina	21/10/2020	17.65	F
	AA 014	Strait of Messina	11/04/2021	22.2	F
	AA 015	Strait of Messina	07/02/2021	34.4	F
	AA 016	Strait of Messina	06/04/2018	35.9	F
	AA 018	Strait of Messina	08/05/2016	35.9	F
	AA 019	Strait of Messina	08/05/2016	33.6	F
	AA 020	Strait of Messina	15/11/2016	28.7	F
	AA 021	Strait of Messina	spring 1982	6.161	M
<i>Ocythoe tuberculata</i>	OT 001	Milazzo	17/03/2009	145.6	F
	OT 002	Strait of Messina	11/05/2008	24.1	M
	OT 003	Gulf of Patti	spring 2017	150.42	F
	OT 004	Finale di Pollina	29/03/2021	318	F
	OT 005	Milazzo	17/02/2018	125.1	F
	OT 006	Strait of Messina	11/05/2008	28.9	F
	OT 007	Strait of Messina	17/06/1996	25	F
	OT 008	Strait of Messina	13/03/2002	30	F
	OT 009	Strait of Messina	30/09/2012	105	F
<i>Tremoctopus violaceus</i>	TV 001	Strait of Messina	winter 1980	46.4	F
	TV 002	Strait of Messina	winter 1980	48.5	F
	TV 003	Strait of Messina	23/08/2020	112.8	F
	TV 004	Strait of Messina	20/01/2021	7	F
	TV 005	Strait of Messina	21/01/2021	8	F
	TV 006	Strait of Messina	22/01/2021	32.75	F
	TV 009	Strait of Messina	03/07/2015	23.8	F
	TV 010	Strait of Messina	05/07/2012	21.3	F
	TV 011	Strait of Messina	19/12/2021	161	F
	TV 012	Strait of Messina	20/06/1999	60	F
	TV 013	Strait of Messina	20/06/1999	63	F
	TV 014	Strait of Messina	20/06/1999	58	F
	TV 015	Strait of Messina	15/05/2005	26.1	M
<i>Tremoctopus gracilis</i>	TG 001	Milazzo	17/01/2005	166	F
	TG 002	Strait of Messina	18/08/2014	150	F
	TG 003	Mongiove	12/02/2022	70.3	F
<i>Tremoctopus</i> sp.	TV 007	Strait of Messina	23/02/2021	7.5	M
	TV 008	Strait of Messina	23/02/2021	7.9	M

Table S2. Total number of predator stomachs used in this study to collect data on the ingestion of holopelagic octopuses (ALB = albacore; BFT = bluefin tuna; MSP = Mediterranean spearfish; SWO = swordfish).

Predator	Years	n. stomachs	Size range (cm)	Size type	Reference study
ALB	2005-2006	127	38.9 - 102.1	FL	[18] and unpublished data
BFT	1998-2000	139	6.3 - 49.5	TL	[16]
BFT	2010-2011	123	115 - 222	FL	[63]
BFT	2011	5	110 - 145	FL	Unpublished data
BFT	2021	34	96 - 207	FL	Unpublished data
MSP	2020	58	113 - 196	LJFL	[78]
MSP	2004-2006	53	105 - 195	LJFL	[66]
SWO	2004-2006	103	110 - 210	LJFL	[66]
SWO	2008	68	72 - 216	LJFL	Unpublished data
SWO	2019	65	114 - 206	LJFL	Unpublished data
SWO	2021	25	111 - 184	LJFL	Unpublished data

Tab. S3. List of the individuals considered for genetic analysis.

Sample Code	Sampling area	Species	Tissue type
AA005	Strait of Messina	<i>Argonauta argo</i>	Muscle
AA015E	Strait of Messina	<i>Argonauta argo</i>	Muscle (hectocotylus inside shell)
AA006	Strait of Messina	<i>Argonauta argo</i>	Muscle
AA006E	Strait of Messina	<i>Argonauta argo</i>	Muscle (hectocotylus inside shell)
AA006U	Strait of Messina	<i>Argonauta argo</i>	Eggs
AA007	Strait of Messina	<i>Argonauta argo</i>	Muscle
AA008	Strait of Messina	<i>Argonauta argo</i>	Muscle
AA015	Strait of Messina	<i>Argonauta argo</i>	Muscle
OT005	Milazzo	<i>Ocythoe tuberculata</i>	Muscle
OT005E	Milazzo	<i>Ocythoe tuberculata</i>	Muscle (hectocotylus inside mantle)
TG002	Strait of Messina	<i>Tremoctopus gracilis</i>	Muscle
TG002U	Strait of Messina	<i>Tremoctopus gracilis</i>	Eggs with embryos
TG003	Strait of Messina	<i>Tremoctopus gracilis</i>	Muscle
TV006	Strait of Messina	<i>Tremoctopus violaceus</i>	Muscle
TV008	Strait of Messina	<i>Tremoctopus sp.</i>	Muscle
TV011	Strait of Messina	<i>Tremoctopus violaceus</i>	Muscle

Table S4. Details of the COI sequences used in this study to compute phylogenetic tree of cephalopod individuals.

GenBank AN	Taxonomy in GenBank	Sampling area	Reference
MW351786	<i>Tremoctopus violaceus</i>	Yucatan peninsula, southern Gulf of Mexico	Santana-Cisneros, unpublished
MW351787	<i>Tremoctopus violaceus</i>	Yucatan peninsula, southern Gulf of Mexico	Santana-Cisneros, unpublished
OM025233	<i>Tremoctopus violaceus</i>	Apulia, Italy—Mediterranean Sea	[41]
MN443917	<i>Tremoctopus violaceus</i>	South Korea—Pacific Ocean	Kim, unpublished
MN370032	<i>Tremoctopus gracilis</i>	-	Sajikumar et al., unpublished
MW025168	<i>Tremoctopus violaceus</i>	South Korea—Pacific Ocean	Oh et al., unpublished
MH379648	<i>Tremoctopus gracilis</i>	India—Indian Ocean	Geetha et al., unpublished
MN370034	<i>Tremoctopus gracilis</i>	-	Sajikumar et al., unpublished
MN370033	<i>Tremoctopus gracilis</i>	-	Sajikumar et al., unpublished
KY649286	<i>Tremoctopus violaceus</i>	Taiwan—Pacific Ocean	[71]
AF377978	<i>Tremoctopus violaceus</i>	Florida, U.S.A.—Atlantic Ocean	[78]
MN560197	<i>Tremoctopus sp.</i>	Chile—Pacific Ocean	[79]
MK186001	<i>Tremoctopus robsoni</i>	New Zealand – Pacific Ocean	[80]
AY557519	<i>Ocythoe tuberculata</i>	-	[81]
KY947106	<i>Ocythoe tuberculata</i>	Korea	[82]
LC596061	<i>Argonauta argo</i>	Oki Island, Japan	[75]

## Reference

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