

Supplementary material

Table S1

Samples used in this study for morphological and molecular analyses. “N/A” indicates no data available. Localities are shown in Figure 1.

Species	Locality	State	Latitude	Longitude	Voucher Number	Collection date	<i>cox3</i> accession	<i>cox3</i> haplotype	<i>psbA</i> accession
<i>Lobophora dispersa</i>	Boca Andrea	Veracruz	19.74711111	- 96.40713889	FEZA 4177	18-06-17	N/A	N/A	N/A
<i>L. dispersa</i>	Boca Andrea	Veracruz	19.74711111	- 96.40713889	FEZA 4178	18-6- 2017	N/A	N/A	N/A
<i>L. dispersa</i>	Boca Andrea	Veracruz	19.74711111	- 96.40713889	FEZA 4179	18-06-17	N/A	N/A	N/A
<i>L. dispersa</i>	Boca Andrea	Veracruz	19.74711111	- 96.40713889	FEZA 4180	18-06-17	N/A	N/A	N/A

<i>L. dispersa</i>	Boca Andrea	Veracruz	19.747111111	- 96.40713889	FEZA 5277	07-04-19	N/A	N/A	N/A
<i>L. dispersa</i>	Playa Muñecos	Veracruz	19.74305556	- 96.40694444	FEZA 1213	12-09-09	N/A	N/A	N/A
<i>L. dispersa</i>	Playa Muñecos	Veracruz	19.74305556	- 96.40694444	FEZA 1796	12-09-09	ON110949	Ld1	HF559009
<i>L. dispersa</i>	Playa Muñecos	Veracruz	19.74305556	- 96.40694444	FEZA 1797	10-10-09	N/A	N/A	HF559010
<i>L. dispersa</i>	Playa Muñecos	Veracruz	19.74305556	- 96.40694444	FEZA 1798	10-10-09	ON110948	Ld1	HF559011
<i>L. dispersa</i>	Playa Muñecos	Veracruz	19.74305556	- 96.40694444	FEZA 3194	12-12-04	N/A	N/A	N/A
<i>L. dispersa</i>	Playa Muñecos	Veracruz	19.74305556	- 96.40694444	FEZA 5825	04-07-21	ON110955	Ld1	N/A

<i>L. dispersa</i>	Punta Delgada	Veracruz	19.85983333	- 96.45983333	FEZA 4462	18-06-17	ON110954	Ld1	N/A
<i>L. dispersa</i>	Punta Puntilla	Veracruz	18.71436111	-95.2895	FEZA 5601	09-08-19	N/A	N/A	N/A
<i>L. dispersa</i>	Punta Puntilla	Veracruz	18.71436111	-95.2895	FEZA 5650	09-08-19	N/A	N/A	N/A
<i>L. dispersa</i>	Punta Puntilla	Veracruz	18.71436111	-95.2895	FEZA 5818	05-04-19	N/A	N/A	N/A
<i>L. dispersa</i>	Punta Puntilla	Veracruz	18.71436111	-95.2895	FEZA 5819	05-04-19	N/A	N/A	N/A
<i>L. dispersa</i>	Punta Puntilla	Veracruz	18.71436111	-95.2895	FEZA 5820	05-04-19	N/A	N/A	N/A
<i>L. dispersa</i>	Punta Puntilla	Veracruz	18.71436111	-95.2895	FEZA 5821	09-08-19	N/A	N/A	N/A

<i>L. dispersa</i>	Punta Puntilla	Veracruz	18.71436111	-95.2895	FEZA 5822	09-08-19	N/A	N/A	N/A
<i>L. dispersa</i>	Punta Puntilla	Veracruz	18.71436111	-95.2895	FEZA 5823	09-08-19	ON110952	Ld1	ON110956
<i>L. dispersa</i>	Punta Puntilla	Veracruz	18.71436111	-95.2895	FEZA 5824	09-08-19	ON110953	Ld3	N/A
<i>L. dispersa</i>	Villa Rica	Veracruz	19.6745	-96.39825	FEZA 4196	18-06-17	ON110951	Ld2	N/A
<i>L. dispersa</i>	Villa Rica	Veracruz	19.6745	-96.39825	FEZA 4463	18-06-17	ON110950	Ld2	N/A
<i>L. variegata</i>	Chen Rio	Quintana Roo	20.38416667	- 86.87461111	FEZA 5816	24-06-10	ON110943	Lv1	N/A
<i>L. variegata</i>	Mezcalito	Quintana Roo	20.42333333	- 86.84277778	FEZA 2139	21-06-10	N/A	N/A	N/A

<i>L. variegata</i>	Playa Maya	Quintana Roo	20.40491667	- 87.01727778	FEZA 5817	25-06-10	ON110947	Lv4	N/A
<i>L. variegata</i>	Puerto Morelos	Quintana Roo	20.84752778	- 86.87505556	FEZA 4024	22-10-16	ON110944	Lv1	ON110957
<i>L. variegata</i>	Puerto Morelos	Quintana Roo	20.84752778	- 86.87505556	FEZA 4025	22-10-16	ON110945	Lv2	ON110958
<i>L. variegata</i>	Pulticub	Quintana Roo	19.08788889	-87.549625	FEZA 5813	19-06-10	N/A	N/A	N/A
<i>L. variegata</i>	Pulticub	Quintana Roo	19.08788889	-87.549625	FEZA 5814	19-06-10	N/A	N/A	N/A
<i>L. variegata</i>	Punta Herrero	Quintana Roo	19.31266667	- 87.44548056	FEZA 2132	19-06-10	N/A	N/A	N/A
<i>L. variegata</i>	Punta Herrero	Quintana Roo	19.31266667	- 87.44548056	FEZA 2133	19-06-10	N/A	N/A	N/A

<i>L. variegata</i>	Punta Herrero	Quintana Roo	19.31266667	- 87.44548056	FEZA 5815	19-06-10	ON110946	Lv3	N/A
<i>L. variegata</i>	Recorrido	Quintana Roo	20.49305556	-86.965	FEZA 2386	23-06-10	N/A	N/A	N/A

Table S2

Sequences used for the phylogenetic analyses. Only *L. dispersa* and *L. variegata* show haplotype numbers according to the network analysis. “N/A” indicates no data available.

Species	Voucher	Locality	Reference	cox3 Genbank accession	psbA Genbank accession	Haplotype
<i>Padina gymnospora</i>	FEZA 951	Mexico: Atlantic Gulf, Veracruz, Penacho de Indio	Díaz-Martínez et al., 2016	HG974403	HF559020	N/A
<i>Lobophora abaculosa</i>	IRD7651	New Caledonia: Mare, Loyalty Islands	Vieira et al., 2014	KM488035	KM487897	N/A
<i>L. abscondita</i>	IRD11057	New Caledonia: Anse Vata Aquarium, Noumea, South Province	Vieira et al., 2014	KM487777	MK298224	N/A

<i>L. agardhii</i>	CP15811	Saint Martin: Rocher Alizé	Vieira, Morrow et al., 2020	MN240122	MW225643	N/A
<i>L. asiatica</i>	NVT052	Viet Nam: Ninh Thuan, Thai An	Vieira et al., 2016	KU353339	N/A	N/A
<i>L. boussoleae</i>	AZO13	Egypt: Masra Shagra	Vieira, Rasoamanendrika et al., 2021	MW510218	N/A	N/A
<i>L. caboverdeana</i>	IRD11180	Saint Vincent and the Grenadines: Bequia: West Cay	Vieira, Morrow et al., 2020	MN240049	MW225620	N/A
<i>L. canariensis</i>	CP15460	Saint Lucia: Petit Piton	Vieira, Morrow et al., 2020	MN240125	MW225621	N/A
<i>L. colombiana</i>	LAF 06430	Colombia: Bahia Granate	Camacho et al., 2019	KU364202	KU364247	N/A
<i>L. crassa</i>	IRD10187	New Caledonia: Ricaudy (fringing reef), Noumea, South Province	Vieira et al., 2014	KM487780	KM488072	N/A
<i>L. crispata</i>	LAF 06633	Costa Rica: Parque Nacional Cahuita	Camacho et al., 2019	N/A	MH885821	N/A
<i>L. dagamae</i>	MOZ18324	Mozambique: Zavora, Deep Reef South	Vieira, Rasoamanendrika et al., 2021	MW510165	N/A	N/A

<i>L. declerckii</i>	CP15457	Saint Lucia	Vieira, Morrow et al., 2020	MN240050	MW225631	N/A
<i>L. declerckii</i>	CWV1028	Curacao: Westpoint	Vieira, Morrow et al., 2020	MN240052	N/A	N/A
<i>L. declerckii</i>	CWV0006	Curacao: Carmabi	Vieira, Morrow et al., 2020	MN240054	N/A	N/A
<i>L. declerckii</i>	CWV0008	Curacao: Carmabi	Vieira, Morrow et al., 2020	MN240059	N/A	N/A
<i>L. declerckii</i>	NI-1792	Mexico: Veracruz: Anegada de Afuera coral reef	Godínez-Ortega et al., 2018	MH587570	N/A	N/A
<i>L. declerckii</i>	NI-1793	Mexico: Veracruz: Anegada de Afuera coral reef	Godínez-Ortega et al., 2018	MH587571	N/A	N/A
<i>L. declerckii</i>	NI-1794	Mexico: Veracruz: Anegada de Afuera coral reef	Godínez-Ortega et al., 2018	MH587572	N/A	N/A
<i>L. declerckii</i>	BDA1788	Bermuda: Bermuda Is.: Northern Lagoon	Schultz et al., 2015	KR260337	N/A	N/A
<i>L. declerckii</i>	KW160	USA: Florida, off Key West, Wreck of Cayman Salvage Master	Schultz et al., 2015	KR260336	N/A	N/A
<i>L. declerckii</i>	FRA1229	Guadeloupe: Bouillante, Pointe a Lezard	Schultz et al., 2015	KR260342	N/A	N/A

<i>L. declerckii</i>	FRA1648	Guadeloupe: Port-Louis, Epave d'un avion	Schultz et al., 2015	KR260318	N/A	N/A
<i>L. declerckii</i>	STX0033	Saint Croix: Alien Nation Reef	Schultz et al., 2015	KR260333	N/A	N/A
<i>L. declerckii</i>	LAF 04483	Gulf of Mexico: Ewing Bank	Camacho et al., 2019	KU364191	KU364233	N/A
<i>L. declerckii</i>	LAF 07001	Gulf of Mexico: Northwest of Dry Tortugas	Camacho et al., 2019	KU364226	KU364273	N/A
<i>L. declerckii</i>	HV939b	Jamaica: St. Ann Parish, Priory	Vieira et al., 2016	N/A	KU352929	N/A
<i>L. delicata</i>	LAF 04445	Gulf of Mexico: Ewing Bank	Camacho et al., 2019	KU364190	KU364232	N/A
<i>L. delicata</i>	LAF06461	Gulf of Mexico: Ewing Bank	Vieira et al., 2016	KU364205	KU364250	N/A
<i>L. densa</i>	IRD7885	New Caledonia: Ilot du Passage, Chesterfield	Vieira et al., 2014	KM487799	N/A	N/A
<i>L. dichotoma</i>	KZN16316	South Africa: Kwazulu Natal	Vieira, Steen et al., 2021	MW223524	MW225634	N/A
<i>L. dickiei</i>	CP15086	Martinique: Case Pilote	Vieira, Morrow et al., 2020	MN240119	N/A	N/A

<i>L. dimorpha</i>	CV3233	New Caledonia: South Province, Noumea, Aquarium Anse Vata	Vieira, Steen et al., 2021	MW223527	KM488082	N/A
<i>L. dispersa</i>	MART02	Martinique: Le Francois	Vieira, Morrow et al., 2020	MN240027	MW225639	Ld6
<i>L. dispersa</i>	MART04	Martinique: Le Francois	Vieira, Morrow et al., 2020	MN240028	MW225640	Ld7
<i>L. dispersa</i>	LAF 04331	Panama: Bocas del Toro	Camacho et al., 2019	KU364189	KU364231	Ld5
<i>L. dispersa</i>	LAF 06680	Gulf of Mexico: Offshore Louisiana, NW Gulf of Mexico	Camacho et al., 2019	KU364214	KU364262	Ld4
<i>L. dispersa</i>	LAF 06684	Gulf of Mexico: Ewing Bank	Camacho et al., 2019	MH885806	N/A	Ld4
<i>L. dispersa</i>	LAF 06738	Costa Rica: Limón	Camacho et al., 2019	KU364216	KU364264	Ld5
<i>L. dispersa</i>	LAF 06786	Gulf of Mexico: Ewing Bank	Camacho et al., 2019	KU364218	KU364265	Ld4
<i>L. dispersa</i>	LAF 06692	Gulf of Mexico: Florida Middle Grounds	Camacho et al., 2019	KU364215	KU364263	Ld4
<i>L. dispersa</i>	LAF 06997	Gulf of Mexico: Southwest of Dry Tortugas	Camacho et al., 2019	KU364224	KU364271	Ld4

<i>L. dispersa</i>	WNC 33550	USA: North Carolina, Onslow Bay TYPE Material	Camacho et al., 2019	MH885813	MH885825	Ld4
<i>L. endeavouriae</i>	MD138	Madagascar: Sainte-Marie, Pointe Tafondro	Vieira, Rasoamanendrika et al., 2021	MW996663	MW996675	N/A
<i>L. flabellata</i>	LMD1356	South Africa: Bhanga Nek	Vieira et al., 2016	KU353355	KU352865	N/A
<i>L. gibbera</i>	IRD275	New Caledonia: Touho, North Province	Vieira et al., 2014	KM487794	KM488069	N/A
<i>L. guadeloupensis</i>	CP15744	Saint Martin: Ile Tintamare-Les arches	Vieira, Morrow et al., 2020	MN240012	N/A	N/A
<i>L. hederacea</i>	CV3168	New Caledonia: Big Abore (barrier reef), Noumea, South Province	Vieira et al., 2014	KM487832	KM488056	N/A
<i>L. isselii</i>	CWV2674	Madagascar: Antsiranana Bay, Mer d'Emeraude	Vieira, Rasoamanendrika et al., 2021	MW510198	MW511004	N/A
<i>L. lamourouxii</i>	IRD11168	Guadeloupe: Rocher la Perle	Vieira, Morrow et al., 2020	MN240031	MW225642	N/A
<i>L. lessepsiana</i>	D4670	Israel: Tchelet Island, Rosh Hanikra	Vieira, Aharonov et al., 2019	MH726451	MH726483	N/A

<i>L. littlerorum</i>	GUA061	Guadeloupe: Anse à la Gourde	Vieira et al., 2016	MN240121	MW225644	N/A
<i>L. monticola</i>	IRD7882	New Caledonia: Bogota, Canala, North Province	Vieira et al., 2014	KM487818	KM488047	N/A
<i>L. nigrescens</i>	HV2438	Australia: Western Australia, Esperance	Vieira et al., 2016	KU353375	N/A	N/A
<i>L. novae</i>	MD206	Madagascar: Cap Masoala	Vieira, Rasoamanendrika et al., 2021	MW996667	MW996682	N/A
<i>L. obscura</i>	CWV2667	Madagascar: Antsiranana Bay, Mer d'Emeraude	Vieira, Rasoamanendrika et al., 2021	MW510179	MW510996	N/A
<i>L. pachyventera</i>	IRD11115	New Caledonia: Pente externe Gadji	Vieira, Steen et al., 2021	MW223532	MW225651	N/A
<i>L. panamensis</i>	LAF06620	Panama: Archipelago de las Perlas	Vieira et al., 2016	KU364210	KU364256	N/A
<i>L. payriae</i>	BDA0102	Bermuda: Somerset Is., Eastern Blue Cut Channel, Middle buoy	Schultz et al., 2015	KR260358	N/A	N/A
<i>L. petila</i>	PHV900	Papua New Guinea: Sek Island, Madang	Vieira et al., 2014	KM487809	KM488060	N/A

<i>L. providenceae</i>	IRD11145	Tuvalu: Funafuti	Vieira, Steen et al., 2021	MW223538	MW225660	N/A
<i>L. richardii</i>	IRD11170	Martinique: Diamant	Vieira, Morrow et al., 2020	MN240034	MW225662	N/A
<i>L. rickeri</i>	GWS023034	Australia: New South Wales, Lord Howe Island, Roach Wall	Vieira et al., 2016	KU353236	KU352896	N/A
<i>L. rosacea</i>	CV3249	New Caledonia: Sainte Marie, Noumea, South Province	Vieira et al., 2014	KM487913	KM488020	N/A
<i>L. setchellii</i>	CP15174	Saint Vincent and the Grenadines: Saint Vincent	Vieira, Morrow et al., 2020	MN240043	MW225669	N/A
<i>L. schneideri</i>	LAF06661	Gulf of Mexico: Campeche Banks	Camacho et al., 2019	KU364213	KU364261	N/A
<i>L. sonderi</i>	IRD10197	New Caledonia: Senez, Noumea, South Province	Vieira et al., 2014	KM487769	KM488033	N/A
<i>L. sonderi</i>	HV2505	Australia: Western Australia, Recherche Archipelago	Vieira et al., 2016	KU353365	KU352859	N/A
<i>L. tortugensis</i>	LAF 07102	Gulf of Mexico: Northwest of Dry Tortugas	Camacho et al., 2019	MH885816	MH885827	N/A
<i>L. undulata</i>	IRD10202	New Caledonia: Laregnere islet, Noumea, South Province	Vieira et al., 2014	KM487842	KM488043	N/A

<i>L. variegata</i>	CP15095	Martinique: Pointe de la Baleine	Vieira, Morrow et al., 2020	MN240036	N/A	Lv1
<i>L. variegata</i>	DR02	Dominican Republic: El Portillo	Vieira, Morrow et al., 2020	MN240038	MW225725	Lv2
<i>L. variegata</i>	CP15731	Saint Martin: Ile de Tintamare: Chico	Vieira, Morrow et al., 2020	MN240041	MW225724	Lv1
<i>L. variegata</i>	NI-547A	Mexico: Cancún: Quintana Roo	Godínez-Ortega et al., 2018	MH587573	N/A	Lv1
<i>L. variegata</i>	LAF 06912	The Bahamas: Dump Reef	Camacho et al., 2019	KU364222	KU364269	Lv2
<i>L. variegata</i>	LAF 06914	Florida Keys: Newfound Harbor Key	Camacho et al., 2019	KU364223	KU364270	Lv2
<i>L. variegata</i>	IRD11140	Guadeloupe: Anse a La Gourde	Vieira et al., 2014	KX061443	KX061444	LV1
<i>L. variegata</i>	D203	Jamaica: St. Ann Parish, Priory	Vieira et al., 2014	KU353160	N/A	Lv5
<i>Lobophora</i> sp. 4	IRD10230	New Caledonia: Menyurua (islet reef), Thio, South Province	Vieira et al., 2014	KM487811	KM488074	N/A
<i>Lobophora</i> sp. 5	IRD7883	New Caledonia: Ilot Ouao, Touho, North Province	Vieira et al., 2014	KM487804	KM488084	N/A

<i>Lobophora</i> sp. 19	GAM13-CP275	French Polynesia: Gambiers, Mangareva	Vieira et al., 2016	KU353213	KU352905	N/A
<i>Lobophora</i> sp. 20	LAF06145	Egypt: Hurghada	Vieira et al., 2016	KU364201	KU364244	N/A
<i>Lobophora</i> sp. 21	LAF06618	Mexico: Puerto Angel, Oaxaca	Vieira et al., 2016	KU364208	N/A	N/A
<i>Lobophora</i> sp. 21	LAF06600	Panama: Isla Cebaco, Veraguas	Vieira et al., 2016	N/A	KU364252	N/A
<i>Lobophora</i> sp. 22	LAF06617	El Salvador: Los Cobanos	Vieira et al., 2016	KU364207	KU364253	N/A
<i>Lobophora</i> sp. 23	GLO180	Glorioso Islands	Vieira et al., 2016	KU353185	KU352940	N/A
<i>Lobophora</i> sp. 26	EUR021	Europa Island	Vieira et al., 2016	KU353331	N/A	N/A
<i>Lobophora</i> sp. 28	HV03441	Egypt: Marsa Alam	Vieira et al., 2016	KU353329	KU352928	N/A
<i>Lobophora</i> sp. 31	MQ11-158	French Polynesia: Eiao	Vieira et al., 2016	KU353350	KU352886	N/A
<i>Lobophora</i> sp. 32	MQ11-475	French Polynesia: Tahuataa	Vieira et al., 2016	KU353346	KU352885	N/A

<i>Lobophora</i> sp. 35	LMD1618	South Africa: Bhanga Nek	Vieira et al., 2016	KU353195	KU352869	N/A
<i>Lobophora</i> sp. 45	ODC1647	Kenya: Mombasa, Nyali, Mc Kenzie Pt	Vieira et al., 2016	KU353382	KU352854	N/A
<i>Lobophora</i> sp. 56	HEC16632	Thailand	Vieira, Steen et al., 2021	MW223562	KX581363	N/A
<i>Lobophora</i> sp. 68	HEC16059	Sri Lanka: Beruwela, Confifi Beach	Vieira et al., 2016	KU353381	KU352853	N/A
<i>Lobophora</i> sp. 87	IRD11211	Clipperton Island: CLIPP 003	Vieira, Steen et al., 2021	MW223565	MW225701	N/A
<i>Lobophora</i> sp. 90	CWV0385	Curacao: Sea Aquarium	Vieira, Morrow et al., 2020	MN240045	N/A	N/A

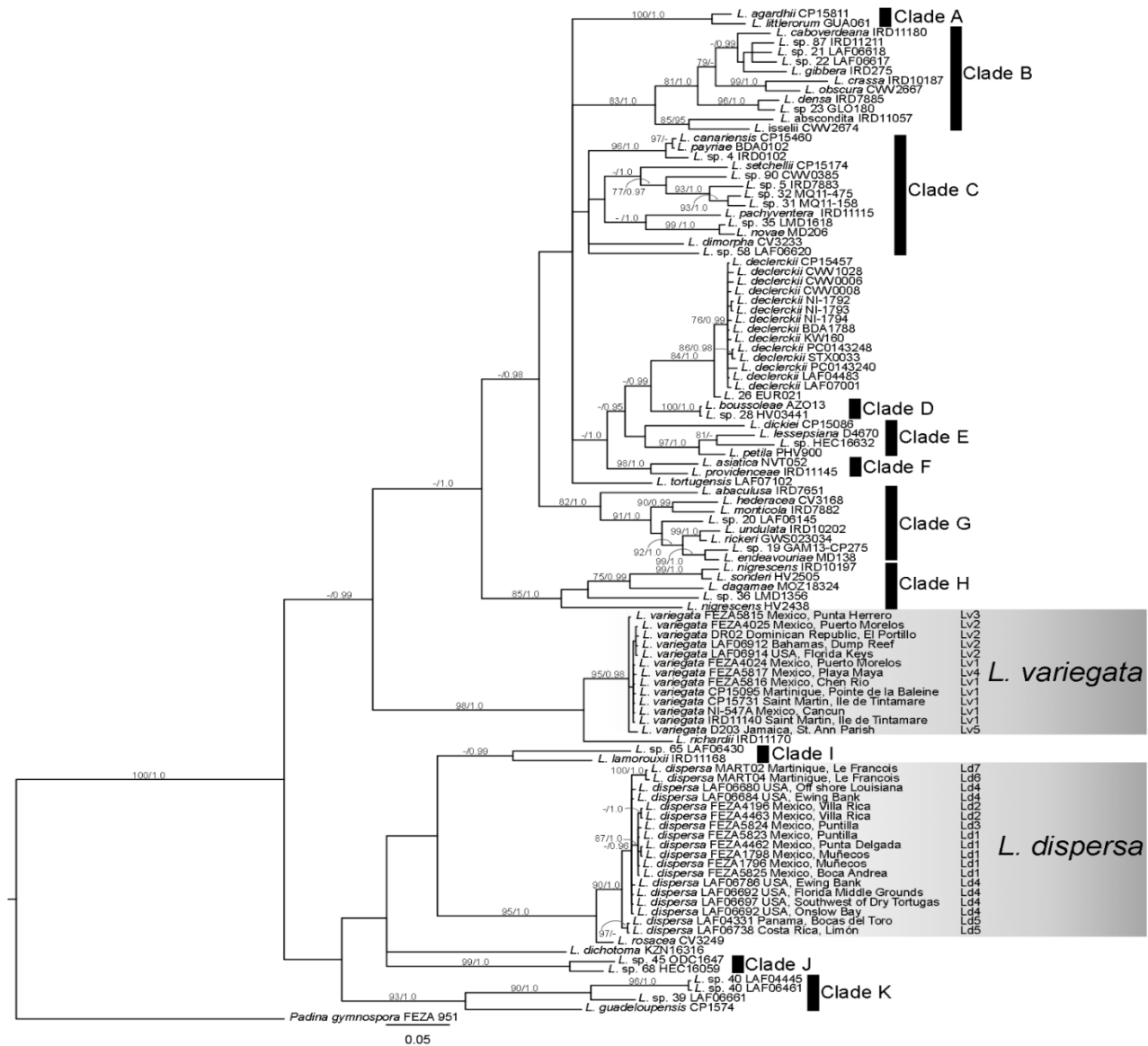


FIGURE S1. Complete bayesian topology of *Lobophora* from *cox3*. Numbers on branches indicate the Bootstrap percentages (BS)/Posterior Probabilities (PP). Only values above 75% or 0.95 are shown, respectively. Clade names as marked in the collapsed topology (Fig. 4)

