

Table S1. List of species with associated genbank accession number for each of the markers used to build the phylogenetic trees.

* COI and 16S sequences of *S. aff. savaglia* and 12S sequences of *S. savaglia* were concatenated and added as a single sequence to the alignment; Same was done with COI sequence of *I. sulcatus* and 16S and 12S sequences of *I. giganteus*.

Species	COI	16S	12S	Reference
<i>Zibrowius primnoidus</i> comb. nov. (DOP–804, DOP–3242, Si-ACH-P4-1, Si-ACH-P4-2)	KJ459364-7	KJ459374-5	KJ459381-4	This study
<i>Zibrowius alberti</i> sp. n. (DOP–3049, DOP–3050, DOP–5332)	KJ459368-70	KJ459376-8	KJ459385-7	This study
<i>Zibrowius ammophilus</i>	KC218395	KC218439	---	Sinniger et al. (2013)
<i>Hurlizoanthus parrishii</i>	KC218389	KC218433	---	Sinniger et al. (2013)
<i>Hurlizoanthus hirondelleae</i> sp. n. (DOP–4098)	KJ459371	KJ459379	KJ459388	This study
<i>Bullagummizoanthus emilyacardiaarum</i>	KC218390	KC218434	---	Sinniger et al. (2013)
<i>Corallizoanthus tsukaharai</i>	EU035630	EU035623	GQ464951	Reimer et al. (2008); Swain (2010)
<i>Kulamanamana haumea</i>	KC218387	KC218431	---	Sinniger et al. (2013)
<i>Savalia aff. savaglia</i> *	EF672657	AY995930	---	Sinniger et al. (unpublished); Siniger et al. (2005)
<i>Savalia savaglia</i> *	---	---	AY995905	Sinniger et al. (2005)
<i>Kauluzoanthus kerbyii</i>	KC218391	KC218435	---	Sinniger et al. (2013)
<i>Parazoanthus swiftii</i>	AB247350	AY995936	AY995909	Reimer et al. (2007); Sinniger et al. (2005)
<i>Parazoanthus darwini</i>	EU333781	EU333751	---	Reimer et al. (2008)
<i>Bergia puertoricense</i>	AB247352	AY995933	AY995916	Reimer et al. (2007); Sinniger et al. (2005)
<i>Parazoanthus alicae</i> sp. n. (DOP–4090)	KJ459372	KJ459380	KJ459389	This study
<i>Parazoanthus anguicomus</i>	EF672660	GQ464851	GQ464941	Sinniger et al. (unpublished); Swain (2010)
<i>Parazoanthus axinellae</i>	EF672659	AY995935	AY995912	Sinniger et al. (unpublished); Siniger et al. (2005)
<i>Parazoanthus juanfernandezii</i>	---	GQ464850	GQ464939	Swain (2010)
<i>Parazoanthus elongatus</i>	EU591621	---	---	Sinniger & Häussermann (2009)
<i>Parazoanthus capensis</i>	---	GQ464852	GQ464942	Swain (2010)
<i>Hydrozoanthus gracilis</i>	EF672668	---	GQ464953	Sinniger et al. (unpublished), Swain (2010)

<i>Hydrozoanthus tunicans</i> “white”	EF672667	---	AY995913	Sinniger et al. (unpublished); Sinniger et al. (2005)
<i>Umimayanthus nakama</i>	KR092575	---	---	Montenegro et al. (2015)
<i>Umimayanthus chanpuru</i>	KR092639	---	---	Montenegro et al. (2015)
<i>Umimayanthus miyabi</i>	KR092569	---	---	Montenegro et al. (2015)
<i>Umimayanthus parasiticus</i>	EF672663	AY995938	AY995910	Sinniger et al. (unpublished); Sinniger et al. (2005)
<i>Antipathozoanthus hickmani</i>	EU333783	EU333756	---	Reimer et al. (2008b)
<i>Antipathozoanthus macaronesicus</i>	HM130496	HM130467	---	Reimer et al. (2010a)
<i>Isozoanthus sulcatus</i> *	GQ848276	–	---	Sinniger et al. (2010)
<i>Isozoanthus giganteus</i> *	---	GQ464867	GQ464964	Swain (2010)
<i>Epizoanthus illoricatus</i>	AB247349	AY995929	AY995901	Reimer et al. (2007), Sinniger et al. (2005)
<i>Epizoanthus paguricola</i>	AB247347	AY995928	AY995902	Reimer et al. (2007), Sinniger et al. (2005)
<i>Epizoanthus scotinus</i>	HM042364	KC218440	GQ464967	Reimer & Sinniger (2010); Sinniger et al. (2013), Swain (2010)
<i>Epizoanthus arenaceus</i>	HM040877	AY995926	GQ464960	Reimer <i>et al.</i> (2010), Sinniger et al. (2005), Swain (2010)
<i>Epizoanthus martinsae</i> sp. n. (DOP–3609)	KJ459373	---	KJ459390	This study
<i>Epizoanthus vagus</i>	---	AY995927	AY995904	Sinniger et al. (2005)
<i>Epizoanths incrustatus</i>	---	GQ464865	GQ464962	Swain (2010)
<i>Epizoanthus paxii</i>	HM040876	---	AY995903	Reimer et al. (2010), Sinniger et al. (2005)
