



SpongeMaps

integrating morphological data with DNA barcodes through a bespoke online portal

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- ² Centre for Australian National Biodiversity Research, CSIRO Plant Industry, Canberra, Australia
- ³ Department of Earth and Environmental Sciences & GeoBio-CenterLMU, Ludwig-Maximilians-University, Munich, Germany



Overview

- Background
- Demonstration
- Into the future

In the beginning...





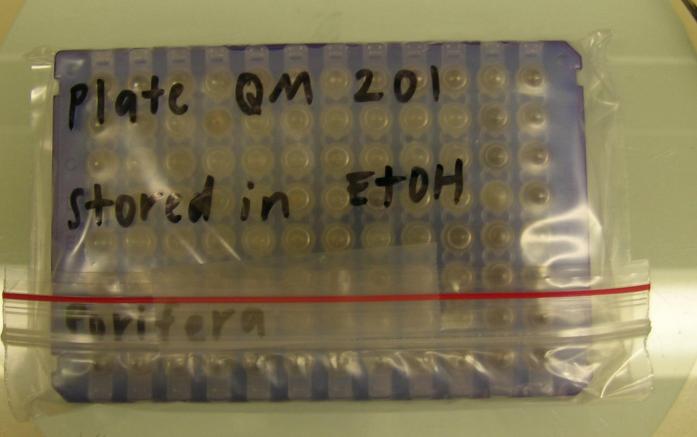




qm queensland museum













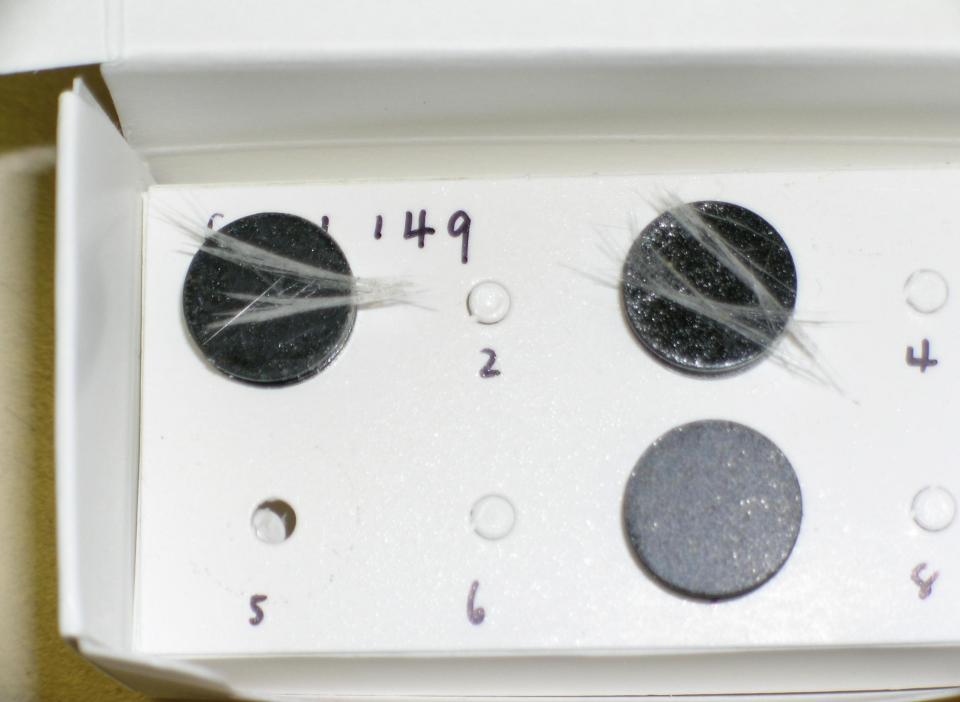


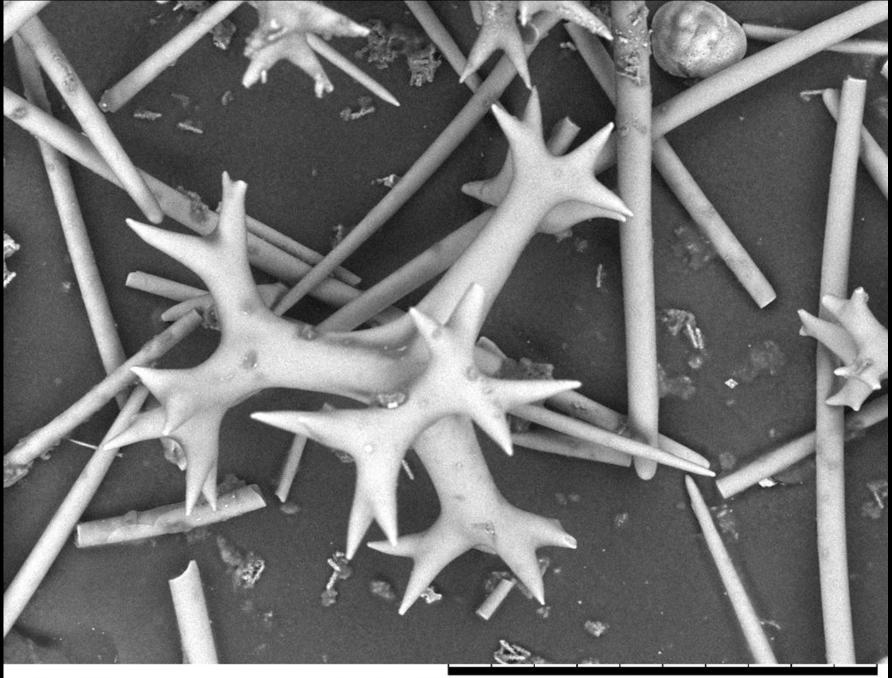












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5,000 OTUs

17,000 DNA samples

30,000 museum specimens





5,000 OTUs

17,000 DNA samples

30,000 museum specimens





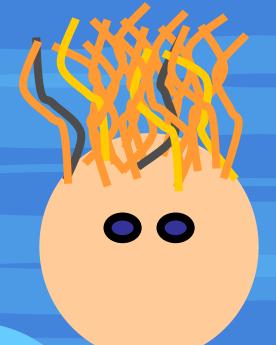
17,000 DNA samples



30,000 museum specimens

chemical compounds

5,000 OTUs





17,000 DNA samples

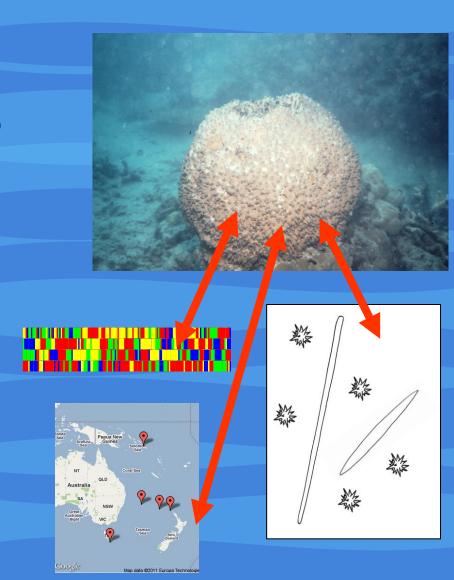


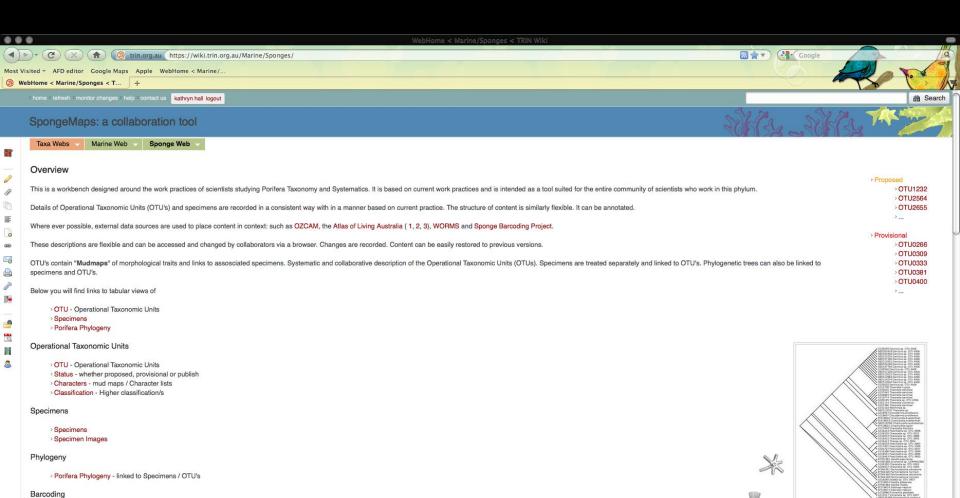
30,000 museum specimens

chemical compounds

SpongeMaps: a collaboration tool

- wiki-based
- allow multiple users (with permissions) to view, edit, add, annotate data associated with:
 - individual specimens
 - operational taxonomic units (OTUs)
- enable data exposure
- facilitate collaboration
- enhances taxonomic consistency
- increases data source sharing (DNA, morphology, chemistry, biogeography, etc.)





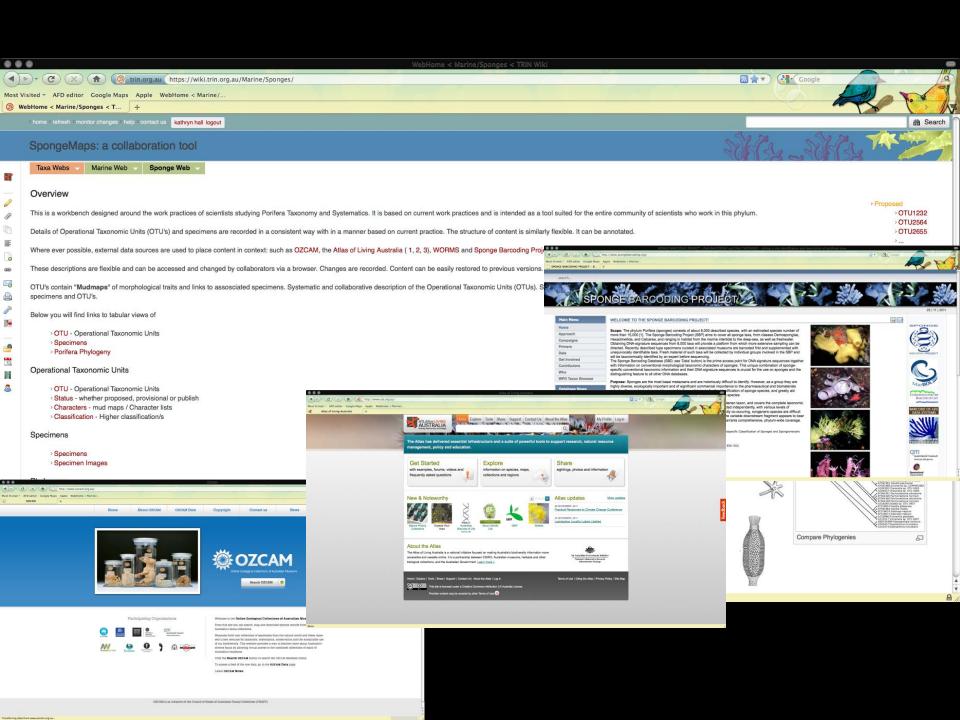
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Compare Phylogenies

via links to Sponge Barcoding Project

> listed in Specimens

> listed in OTU? Operational Taxonomic Units







SpongeMaps: a collaboration tool

Taxa Webs

✓ Marine Web
✓ Sponge Web
✓ Taxa Web
✓ OTUs
✓

Operational Taxonomic Units - current

	ОТИ	Genus	Species	Megascleres	Microscleres	AphialD	AboutURI	References	Remarks	Modified
1	OTU0006	Cinachyrella	australiensis	oxeas: ~7000- \square 9000 μ m; anatriaenes: >1000 μ m; protriaenes: >1000 μ m.	sigmaspires: 14-20 μ m; raphides: ~150 μ m.	171296	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171296	N/A	none.	25 Nov 2011 - 04:32
2	OTU0266	Craniella	coxi	oxeas: choanosomal, ~890 ŵm; anisoxeas: ectosomal, ~300â□□500 ŵm; protriaenes: ~1200 ŵm.	sigmaspires: ~10 Åμm; spirasters.	367755		N/A	synonyms: Chalinula coxi Lendenfeld, 1885; Tethya dactyloidea Carter, 1869; Tetilla dactyloidea var. lingua Annandale, 1915.	24 Nov 2011 - 22:23
3	OTU0309	Cinachyrella	sp. (OTU 0309)	oxeas: \sim 3500 μ m; anisoxeas: (?), \sim 3000 μ m; anatriaenes: \sim 2300 μ m; protriaenes: \sim 2000 μ m.	nil.	171287	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171287	N/A	none.	24 Nov 2011 - 22:26
4	OTU0333	Cinachyrella	sp. (OTU 0333)	oxeas: strongyloxeas, ~5000–6000 μ m; protriaenes: ~1000 μ m.	microxeas: ~200 μ m; sigmaspires: ~10 μ m.	171287	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171287	N/A	none.	24 Nov 2011 - 22:29
5	OTU0381	Cinachyrella	sp. (OTU 0381)	styles: ~2000 × 25 μ m; protriaenes: 2 classes, 1, ~2500–2800 × 12–15 μ m, 2, subtylote, rare ~300 × 10 μ m.	sigmaspires: ~15–18 μm.	171287	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171287	N/A	none.	24 Nov 2011 - 22:28
6	OTU0400	Cinachyrella	sp. (OTU 0400)	oxeas: 2 classes, 1, very long, thin, \sim 400–800 × 10–20 μ m, 2, very large, none intact; anatriaenes: \sim 500 × 8 μ m; prodenes: \sim 900 × 15 μ m; promonaenes: \sim 900 × 15 μ m.	microxeas: ~90 × 2 μ m; sigmaspires: ~10 × 1.5 μ m; spirasters: ~30 × 1.5 μ m.	171287	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171287	N/A	promonaenes unable to be located on second observation; likely to be broken prodiaene.	24 Nov 2011 - 22:28
7	OTU0402	Craniella	sp. (OTU 0402)	oxeas: numerous size classes, 280?3500 ?m; anatriaenes: hair-like; protriaenes: 2800?5000 ? 10?20 ?m.	nil.	132093	http://www.marinespecies.org /aphia.php?p=taxdetails& id=132093	N/A	none.	24 Nov 2011 - 22:30
8	OTU0404	Cinachyrella	sp. (OTU 0404)	oxeas: 2 size classes, 1, ~1500–4500 × 60–70 μ m, 2, ~200 × 15 μ m; anatriaenes: ~3000 × 25 μ m; protriaenes: ~900–3500 × 5–30	nil.	171287	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171287	N/A	promonaenes unable to be located on second observation; likely to be broken prodiaene.	24 Nov 2011 - 22:30

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SpongeMaps: a collaboration tool

Taxa Webs Marine Web Sponge Web Taxa Web OTUs

Operational Taxonomic Units - current

оти	Genus	Species	Megascleres	Microscleres	AphialD	AboutURI	References	Remarks	Modified
OTU0006	Cinachyrella	australiensis	oxeas: ~7000-9000 μm; anatriaenes: >	sigmaspires: 14-20 µm; raphides: ~150	171296	http://www.marinespecies.org/	N/A	none.	25 Nov 2011 - 04:32
OTU0266	Craniella	coxi	oxeas: choanosomal, ~890 µm; anisoxeas: ectosomal, ~300â□□500 µm; protriaenes: ~1200 µm.	sigmaspires: ~10 Åμm; spirasters.	367755		N/A	synonyms: Chalinula coxi Lendenfeld, 1885; Tethya dactyloidea Carter, 1869; Tetilla dactyloidea var. lingua Annandale, 1915.	24 Nov 2011 - 22:23
OTU0309	Cinachyrella	sp. (OTU 0309)	oxeas: $\sim 3500 \ \mu m$; anisoxeas: (?), $\sim 3000 \ \mu m$; anatriaenes: $\sim 2300 \ \mu m$; protriaenes: $\sim 2000 \ \mu m$.	nil.	171287	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171287	N/A	none.	24 Nov 2011 - 22:26
OTU0333	Cinachyrella	sp. (OTU 0333)	oxeas: strongyloxeas, \sim 5000–6000 μ m; protriaenes: \sim 1000 μ m.	microxeas: ~200 μm; sigmaspires: ~10 μm.	171287	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171287	N/A	none.	24 Nov 2011 - 22:29
OTU0381	Cinachyrella	sp. (OTU 0381)	styles: \sim 2000 × 25 μ m; protriaenes: 2 classes, 1, \sim 2500 \sim 12–15 μ m, 2, subtylote, rare \sim 300 \times 10 μ m.	sigmaspires: ~15–18 μm.	171287	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171287	N/A	none.	24 Nov 2011 - 22:28
OTU0400	Cinachyrella	sp. (OTU 0400)	oxeas: 2 classes, 1, very long, thin, \sim 400–800 \times 10–20 μ m, 2, very large, none intact; anatriaenes: \sim 500 \times 8 μ m; prodiaenes: \sim 900 \times 15 μ m; promonaenes: \sim 900 \times 15 μ m;	microxeas: ~90 × 2 μ m; sigmaspires: ~10 × 1.5 μ m; spirasters: ~30 × 1.5 μ m.	171287	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171287	N/A	promonaenes unable to be located on second observation; likely to be broken prodiaene.	24 Nov 2011 - 22:28
OTU0402	Craniella	sp. (OTU 0402)	oxeas: numerous size classes, 28073500 ?m; anatriaenes: hair-like; protriaenes: 280075000 ? 10720 ?m.	nil.	132093	http://www.marinespecies.org /aphia.php?p=taxdetails& id=132093	N/A	none.	24 Nov 2011 - 22:30
OTU0404	Cinachyrella	sp. (OTU 0404)	oxeas: 2 size classes, 1, ~1500–4500 \times 60–70 μ m, 2, ~200 \times 15 μ m; anatriaenes: ~3000 \times 25 μ m; protriaenes: ~900–3500 \times 5–30 μ m; promonaenes: ~1000 \times 4 μ m.	nil.	171287	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171287	N/A	promonaenes unable to be located on second observation; likely to be broken prodiaene.	24 Nov 2011 - 22:30
ОТІ	J0404	J0404 Cinachyrella	J0404 Cinachyrella sp. (OTU 0404)	oxeas: 2 size classes, 1, \sim 1500–4500 \times 60–70 μ m, 2, \sim 200 \times 15 μ m; anatriaenes: \sim 3000 \times 25 μ m; protriaenes: \sim 900–3500 \times 5–30	oxeas: 2 size classes, 1, ~1500—4500 × 60–70 μm, 2, ~200 × 15 μm; anatriaenes: ~3000 × 25 μm; protriaenes: ~900–3500 × 5–30 μm; promonaenes: ~1000 × 4 μm.	oxeas: 2 size classes, 1,1500-4500 x 60-70 μm, 2, -200 x 15 μm; anatriaenes: -3000 x 25 μm; protriaenes: -900-3500 x 5-30 μm; promonaenes: -1000 x 4 μm.	1072O 7m.	10720 7m.	10720 7m.

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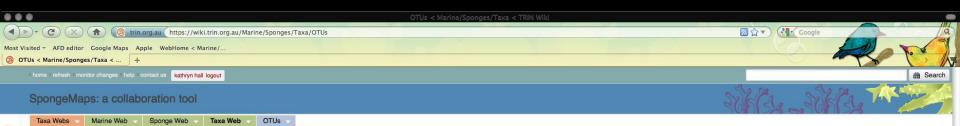
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Operational Taxonomic Units - current

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	оти	Genus	Species	Megascleres	Microscleres	AphialD	AboutURI	References	Remarks	Modified
					raphides					
	OTU0006	Cinachyrella	australiensis	oxeas: ~7000- \square 9000 μ m; anatriaenes: >1000 μ m; protriaenes: >1000 μ m.	sigmaspires: 14-20 μ m; raphides: ~150 μ m.	171296	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171296	N/A	none.	25 Nov 2011 - 04:32
2	OTU0415	Cinachyrella	sp. (OTU 0415)	oxeas: 2 size classes, 1, ~2350 × 40 μ m, 2, ~750 × 7 μ m.	microxeas: \sim 200 × 3 μ m; sigmaspires: \sim 10–20 × 1–20 μ m; raphides: \sim 160 × 0.5 μ m.	171287	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171287	Burton (1934; p. 526).	Specimen QM G303045 contains triaenes. Similar to Cinachyrella enigmatica (Burton, 1934), but not pink in colour.	25 Nov 2011 - 00:57
3	OTU2231	Fangophilina	sp. (OTU 2231)	oxeas: 2 size classes, 1, ~3400 �m, 2, ~1165 �m; protriaenes: rare, only one found, ~1150 �m.	sigmas: ~10 �m; raphides: ~230 �m.	171359	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171359	N/A	none.	24 Nov 2011 - 22:41
1	OTU2655	Cinachyrella	enigmatica	oxeas: ~1000â□□2100 µm.	microxeas: ~25 ŵm; sigmaspires: 2 size classes, 1, ~25 ŵm, 2, ~10 ŵm; raphides: also in trichodragmata, ~100å□□145 ŵm.	171301		Burton (1934: p. 526).	none.	25 Nov 2011 - 00:32
					Page 1	of 1	20 -			View 1 - 4 o

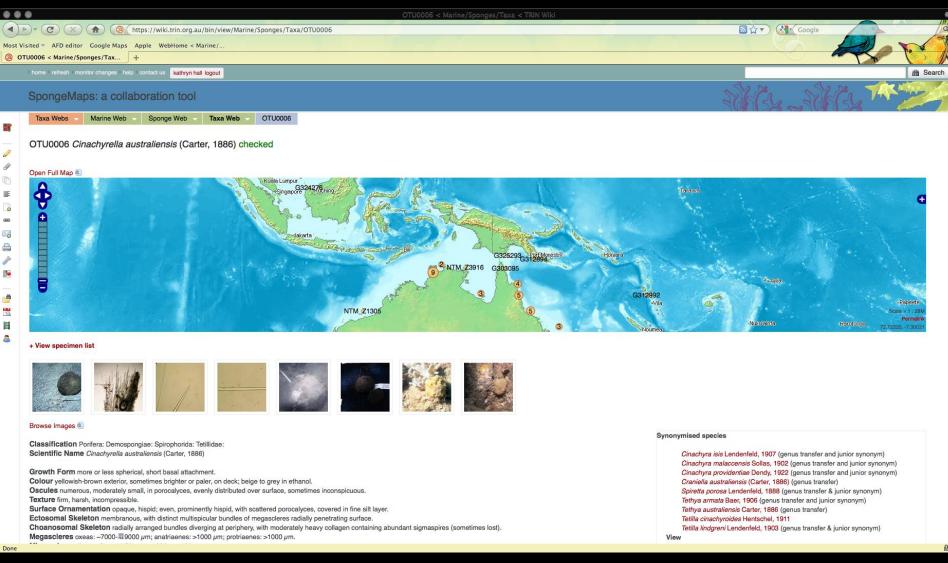
r13 - 2011-11-21 - 10:04:00 - Main.GarryJolleyRogers

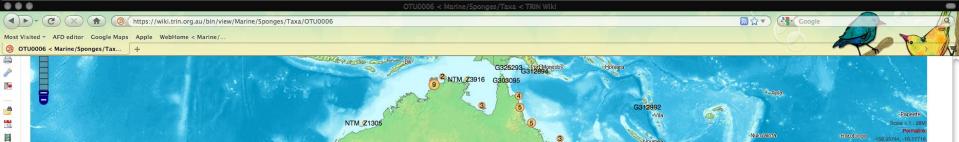
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Classification Porifera: Demospongiae: Spirophorida: Tetillidae: Scientific Name Cinachyrella australiensis (Carter, 1886)

Growth Form more or less spherical, short basal attachment.

Colour yellowish-brown exterior, sometimes brighter or paler, on deck; beige to grey in ethanol.

Oscules numerous, moderately small, in porocalyces, evenly distributed over surface, sometimes inconspicuous.

Texture firm, harsh, incompressible.

Surface Ornamentation opaque, hispid; even, prominently hispid, with scattered porocalyces, covered in fine silt layer.

Ectosomal Skeleton membranous, with distinct multispicular bundles of megascleres radially penetrating surface.

Choanosomal Skeleton radially arranged bundles diverging at periphery, with moderately heavy collagen containing abundant sigmaspires (sometimes lost).

Megascleres oxeas: ~7000- $\frac{100}{100}$ 9000 μ m; anatriaenes: >1000 μ m; protriaenes: >1000 μ m.

Microscleres sigmaspires: 14-20 µm; raphides: ~150 µm.

Remarks or Comments none.

References N/A

Edit History Author: QM Checked by: K Hall Date: 1 Nov 2009

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Synonymised species

Cinachyra isis Lendenfeld, 1907 (genus transfer and junior synonym) Cinachyra malaccensis Sollas, 1902 (genus transfer and junior synonym)

Cinachyra providentiae Dendy, 1922 (genus transfer and junior synonym)

Craniella australiensis (Carter, 1886) (genus transfer)

Spiretta porosa Lendenfeld, 1888 (genus transfer & junior synonym)

Tethya armata Baer, 1906 (genus transfer and junior synonym)

Tethya australiensis Carter, 1886 (genus transfer)

Tetilla cinachyroides Hentschel, 1911

Tetilla lindgreni Lendenfeld, 1903 (genus transfer & junior synonym)

World porifera database record

WoRMS record

WoRMS species record

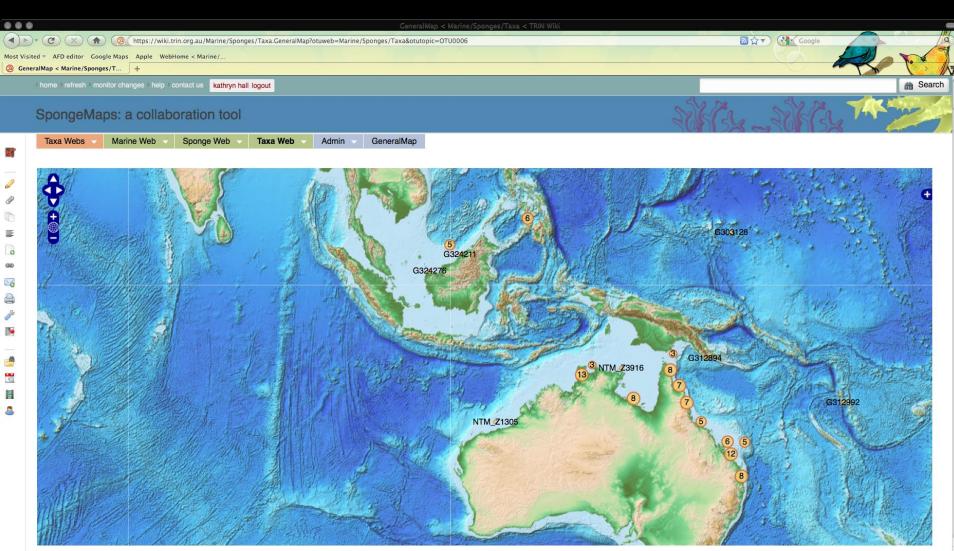
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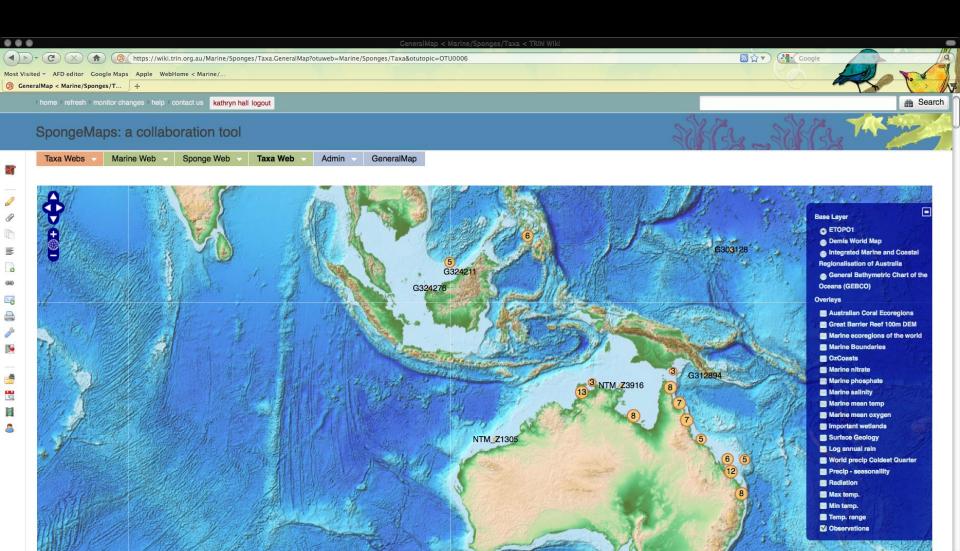
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r11 - 2011-11-25 - 15:32:11 - Main.GarryJolleyRogers

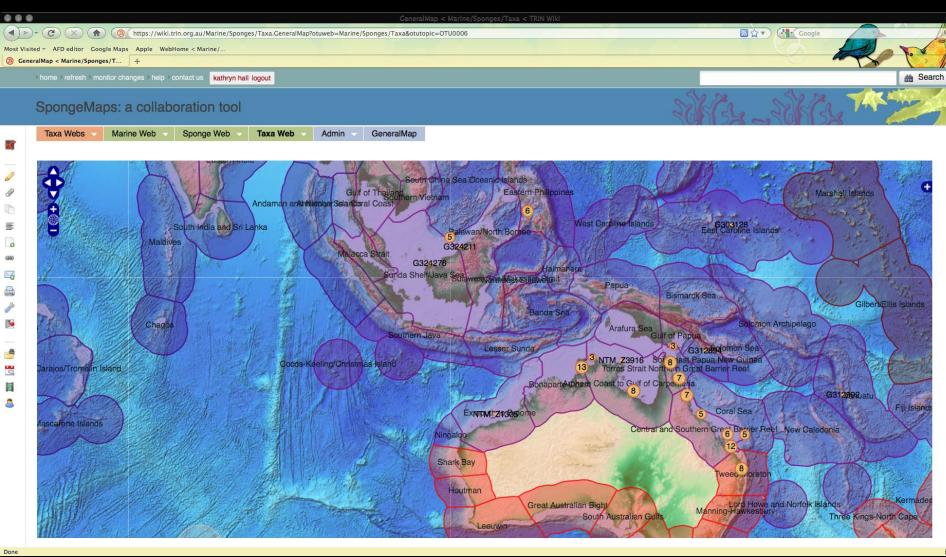
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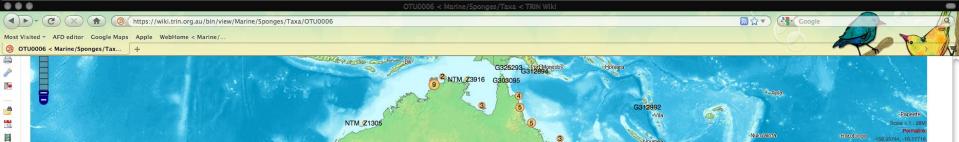






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Microscleres sigmaspires: 14-20 µm; raphides: ~150 µm.

Remarks or Comments none.

References N/A

Edit History Author: QM Checked by: K Hall Date: 1 Nov 2009

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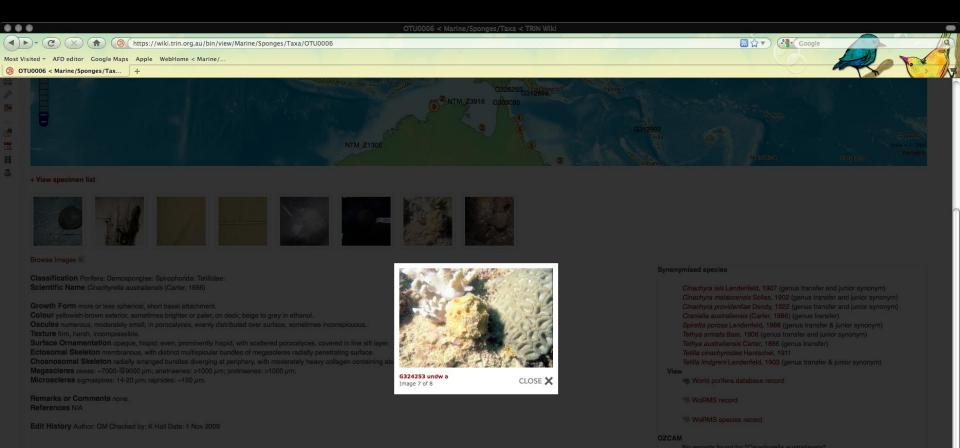
OZCAM

No records found for *Cinachyrella australiensis*

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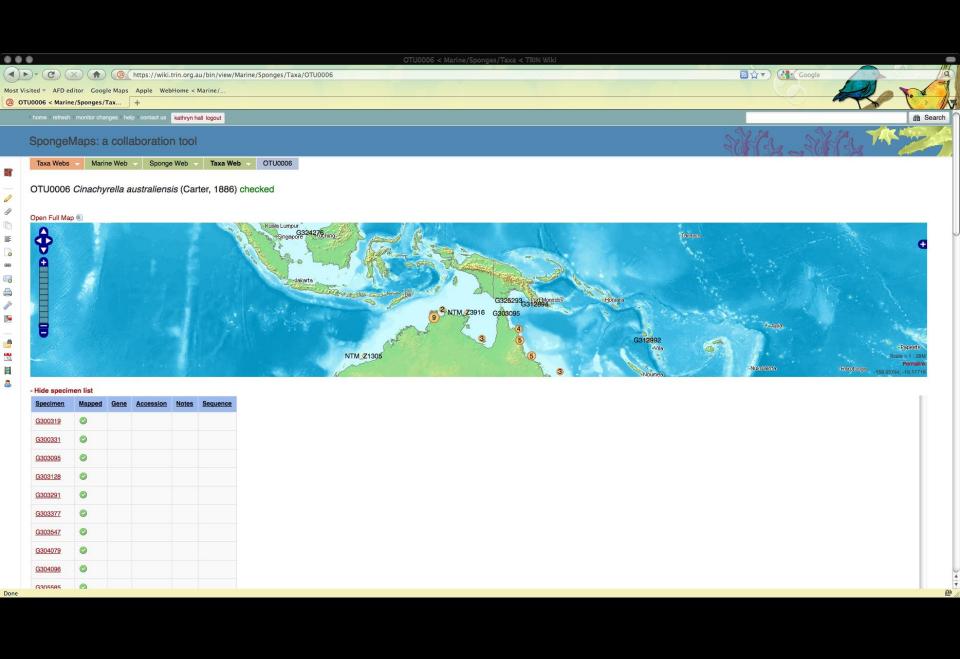


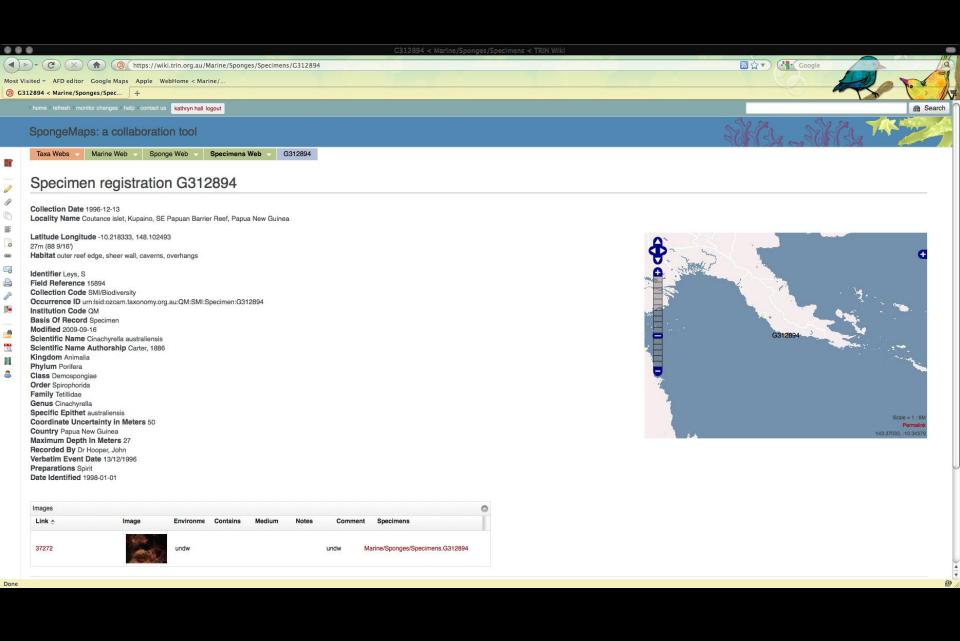
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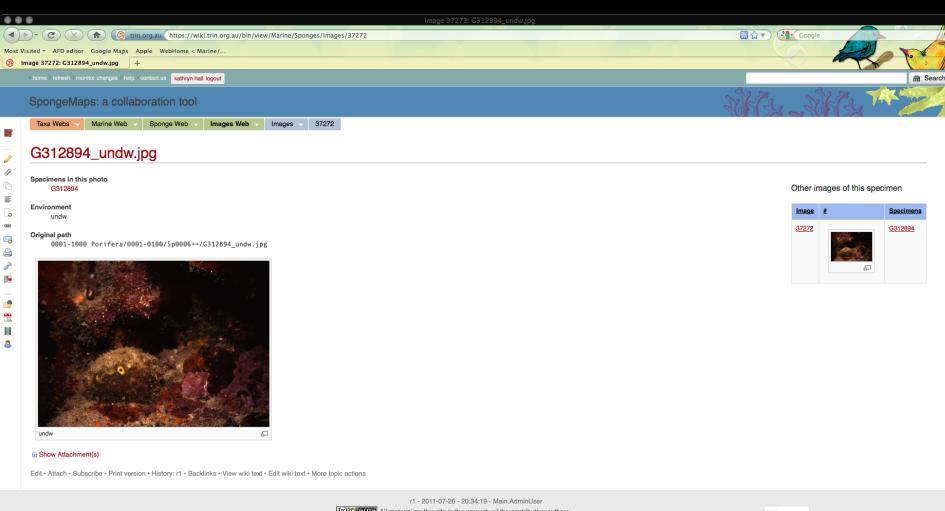
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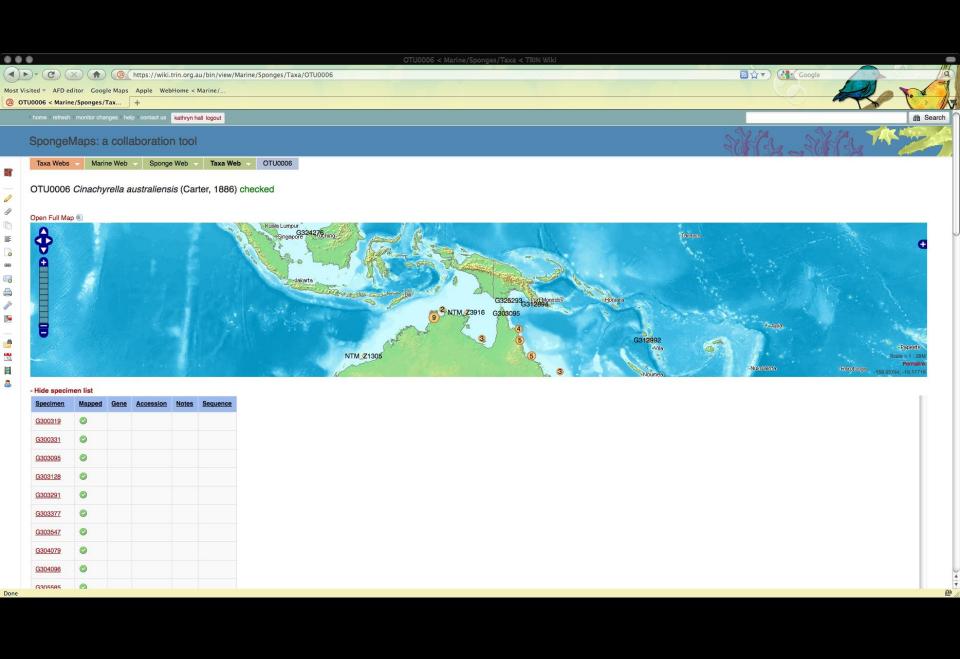


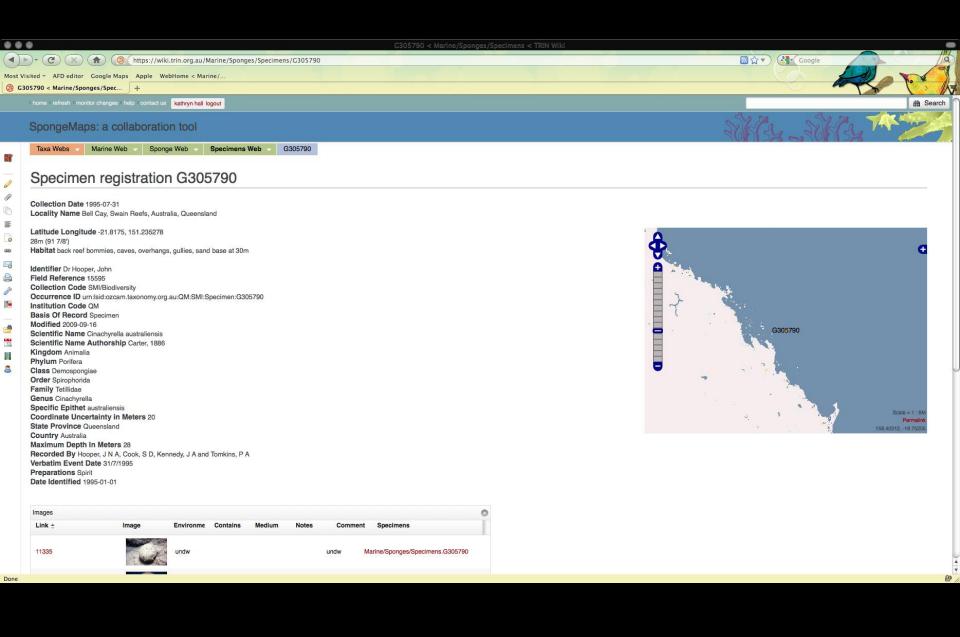
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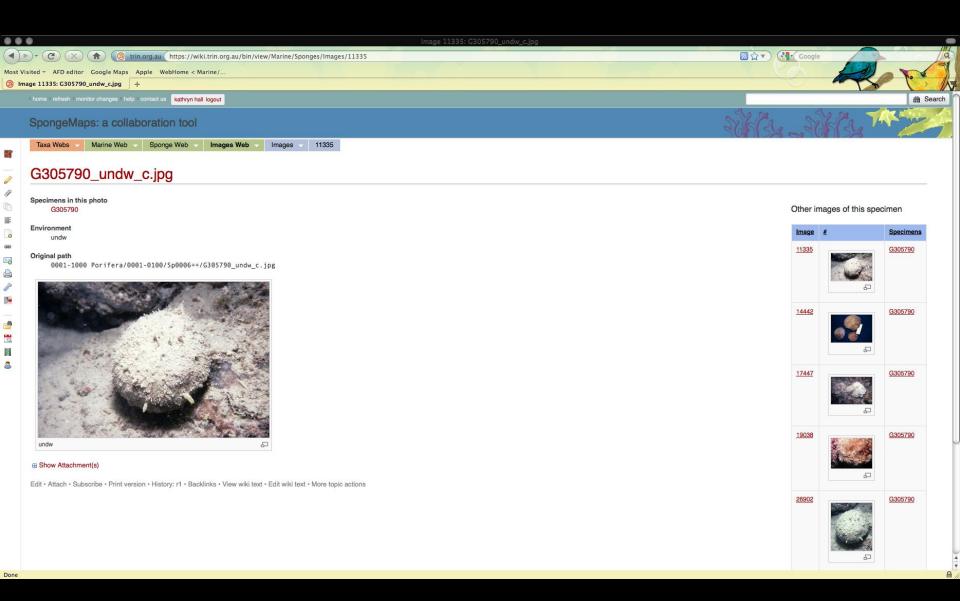
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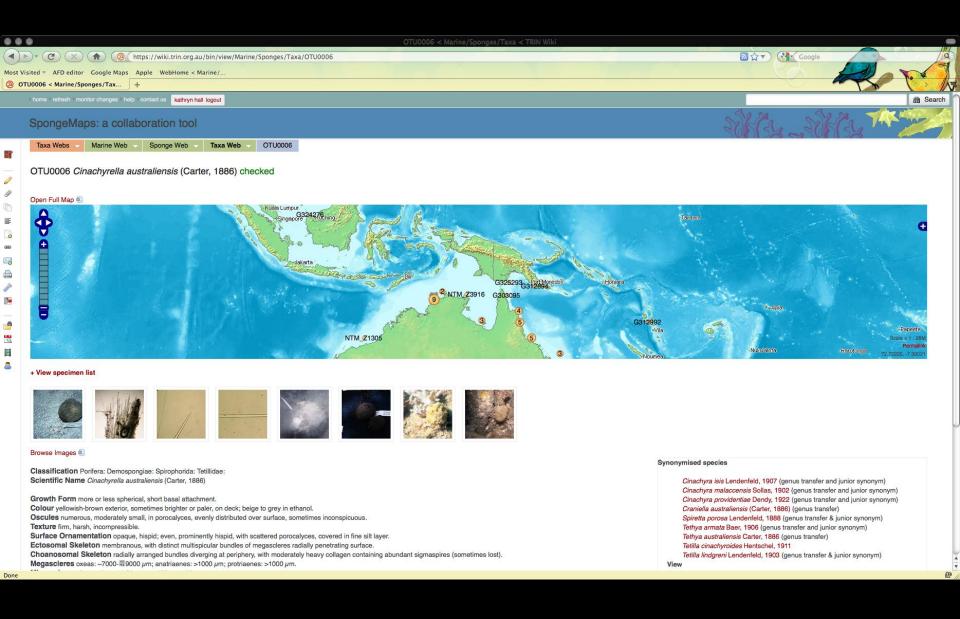
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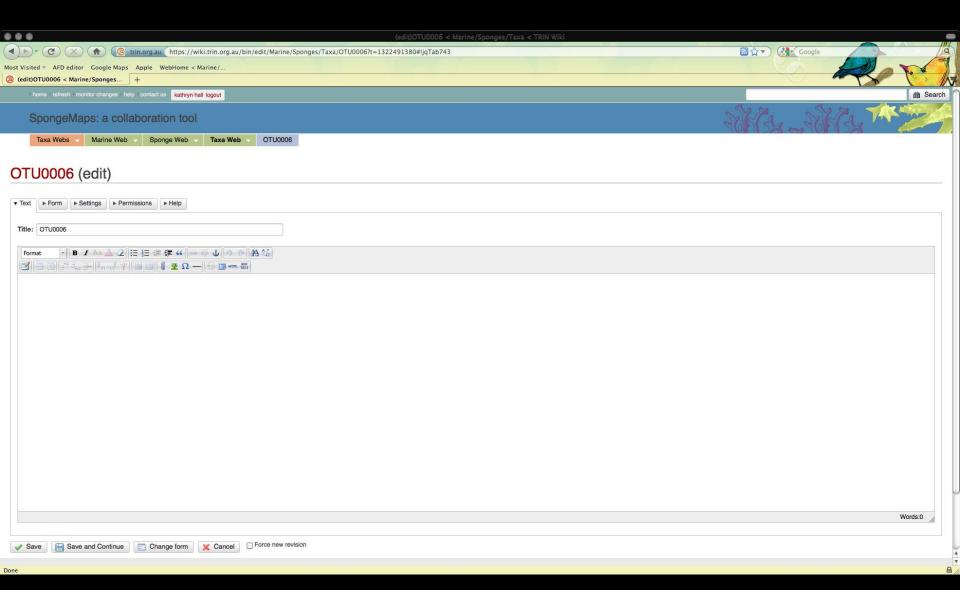


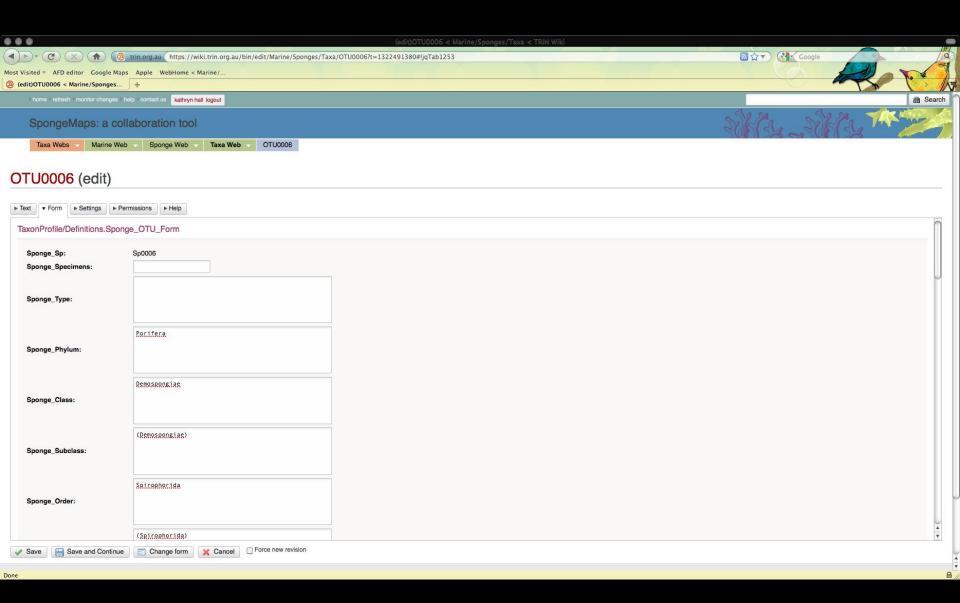
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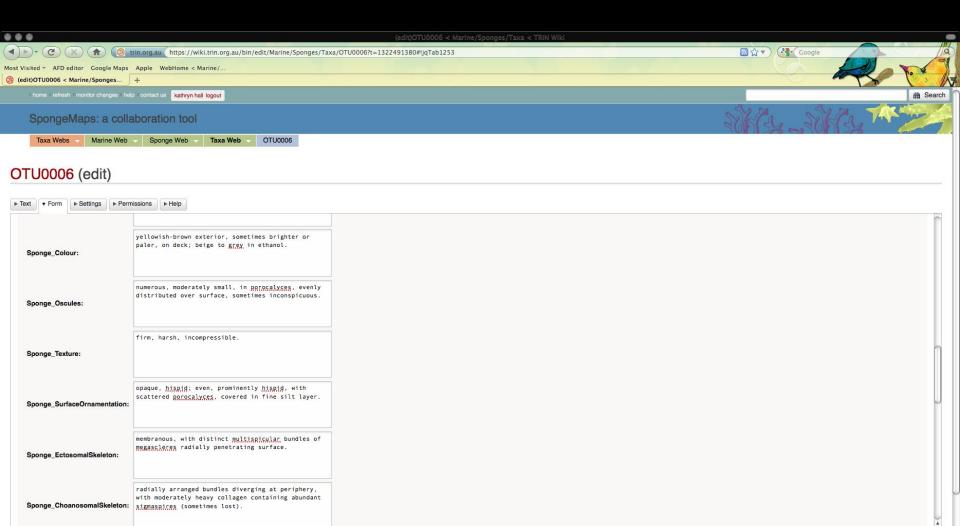
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SpongeMaps: a collaboration tool

Taxa Webs

✓ Marine Web
✓ Sponge Web
✓ Taxa Web
✓ OTUs
✓

Operational Taxonomic Units - current

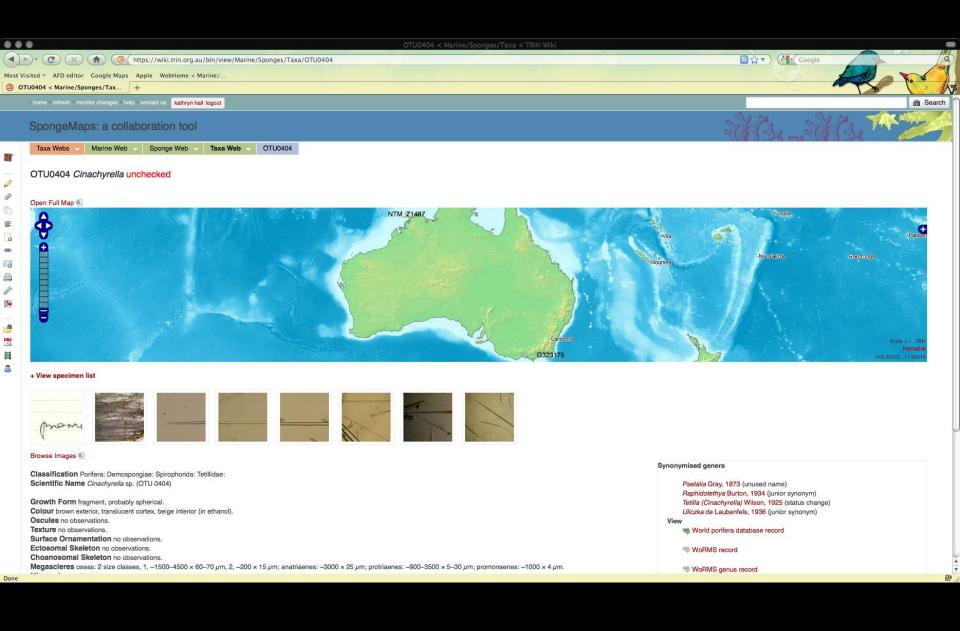
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2 OTU0266	Craniella	coxi	oxeas: choanosomal, ~890 µm; anisoxeas: ectosomal, ~300â□□500 µm; protriaenes: ~1200 µm.	sigmaspires: ~10 ŵm; spirasters.	367755		N/A	synonyms: Chalinula coxi Lendenfeld, 1885; Tethya dactyloidea Carter, 1869; Tetilla dactyloidea var. Iingua Annandale, 1915.	24 Nov 2011 - 22:23
3 OTU0309	Cinachyrella	sp. (OTU 0309)	oxeas: \sim 3500 μ m; anisoxeas: (?), \sim 3000 μ m; anatriaenes: \sim 2300 μ m; protriaenes: \sim 2000 μ m.	nil.	171287	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171287	N/A	none.	24 Nov 2011 - 22:26
4 OTU0333	Cinachyrella	sp. (OTU 0333)	oxeas: strongyloxeas, ~5000–6000 μ m; protriaenes: ~1000 μ m.	microxeas: ~200 μ m; sigmaspires: ~10 μ m.	171287	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171287	N/A	none.	24 Nov 2011 - 22:29
5 OTU0381	Cinachyrella	sp. (OTU 0381)	styles: ~2000 × 25 μ m; protriaenes: 2 classes, 1, ~2500–2800 × 12–15 μ m, 2, subtylote, rare ~300 × 10 μ m.	sigmaspires: ~15–18 μ m.	171287	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171287	N/A	none.	24 Nov 2011 - 22:28
6 OTU0400	Cinachyrella	sp. (OTU 0400)	oxeas: 2 classes, 1, very long, thin, \sim 400–800 \times 10–20 μ m, 2, very large, none intact; anatriaenes: \sim 500 \times 8 μ m; prodiaenes: \sim 900 \times 15 μ m; promonaenes: \sim 900 \times 15 μ m.	microxeas: $\sim 90 \times 2 \ \mu m$; sigmaspires: $\sim 10 \times 1.5 \ \mu m$; spirasters: $\sim 30 \times 1.5 \ \mu m$.	171287	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171287	N/A	promonaenes unable to be located on second observation; likely to be broken prodiaene.	24 Nov 2011 - 22:28
7 OTU0402	Craniella	sp. (OTU 0402)	oxeas: numerous size classes, 280?3500 ?m; anatriaenes: hair-like; protriaenes: 2800?5000 ? 10?20 ?m.	nil.	132093	http://www.marinespecies.org /aphia.php?p=taxdetails& id=132093	N/A	none.	24 Nov 2011 - 22:30
8 OTU0404	Cinachyrella	sp. (OTU 0404)	oxeas: 2 size classes, 1, ~1500–4500 × 60–70 μ m, 2, ~200 × 15 μ m; anatriaenes: ~3000 × 25 μ m; protriaenes: ~900–3500 × 5–30	nil.	171287	http://www.marinespecies.org /aphia.php?p=taxdetails& id=171287	N/A	promonaenes unable to be located on second observation; likely to be broken prodiaene.	24 Nov 2011 - 22:30

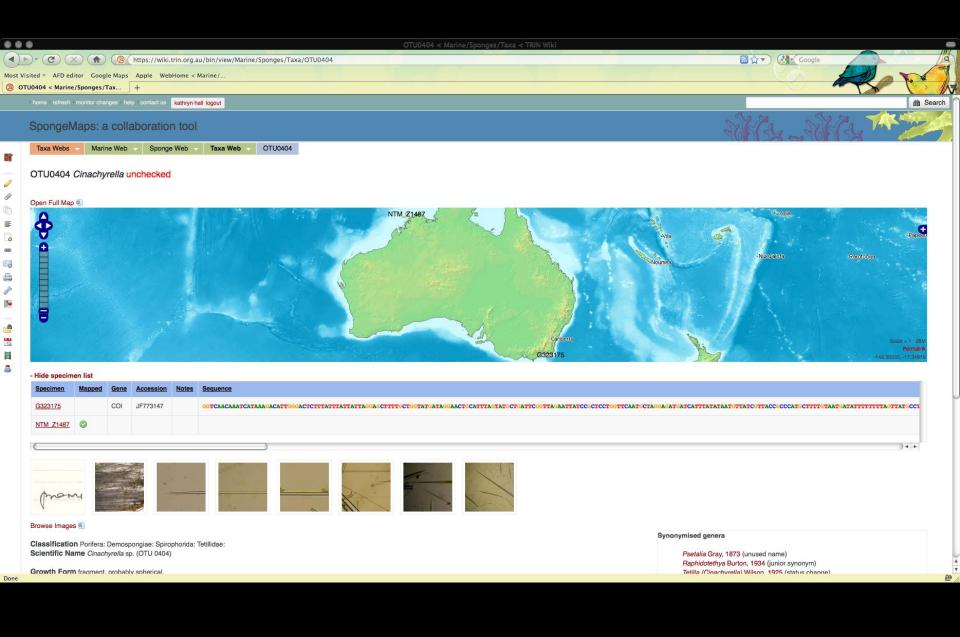
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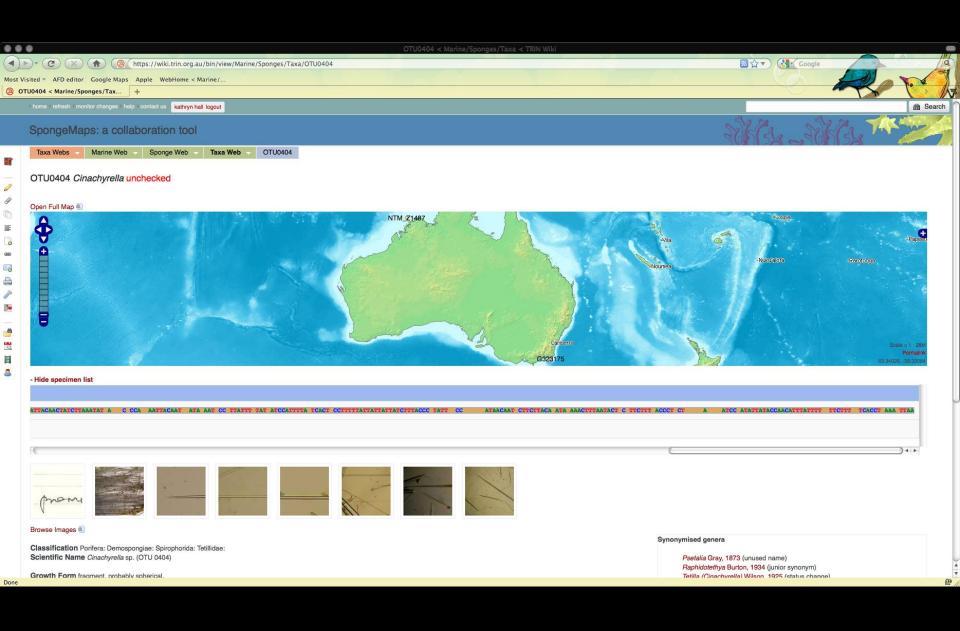
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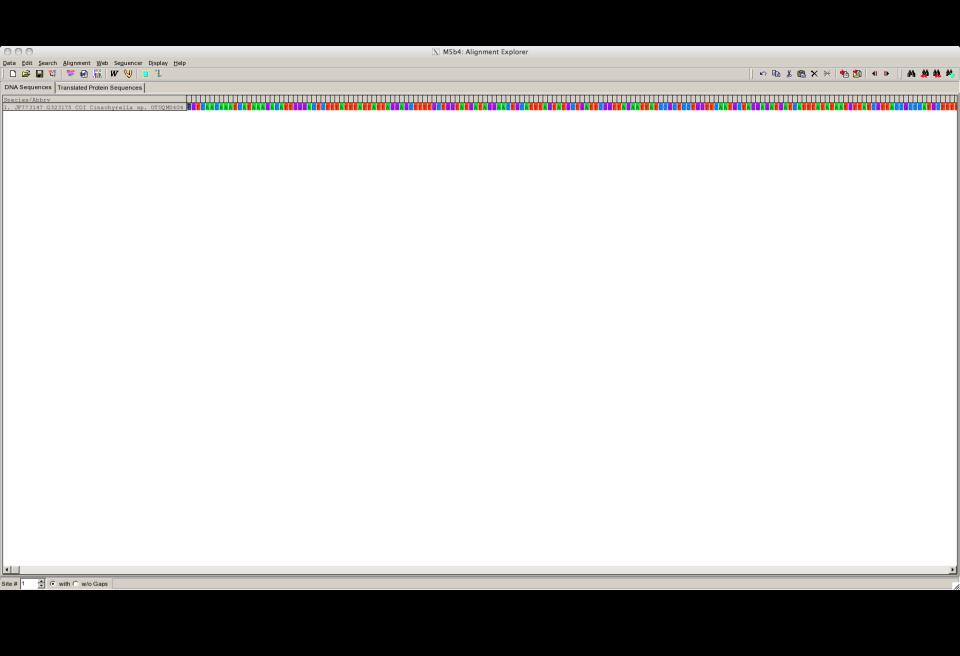
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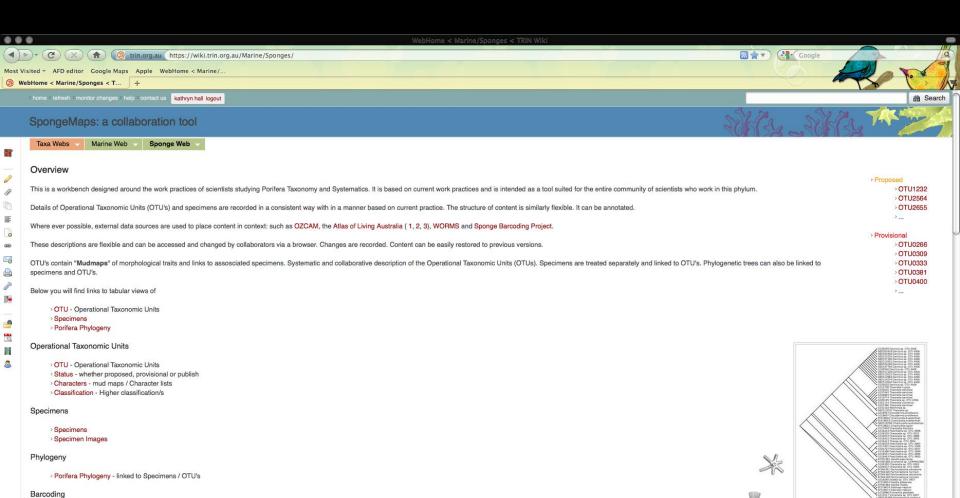
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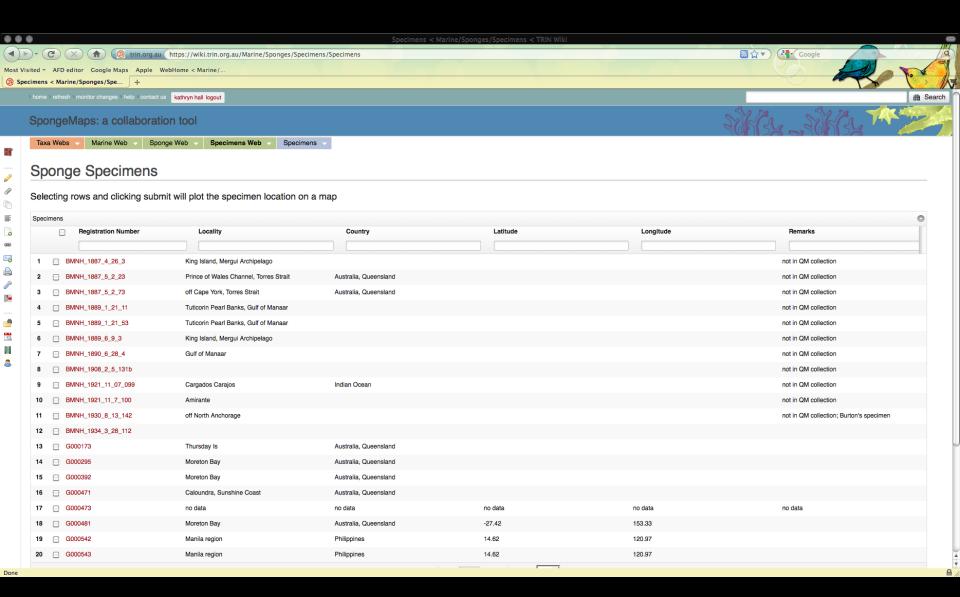
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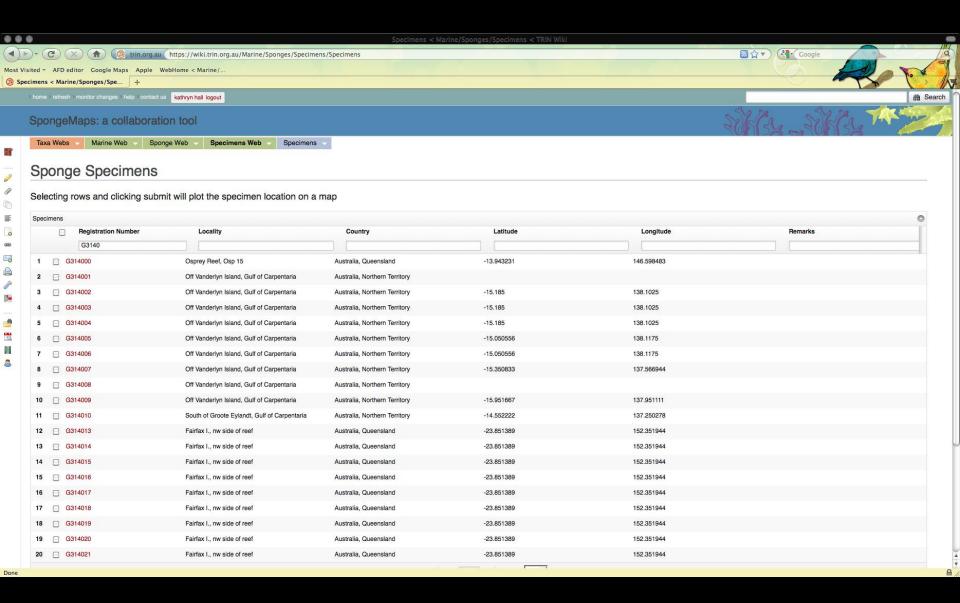
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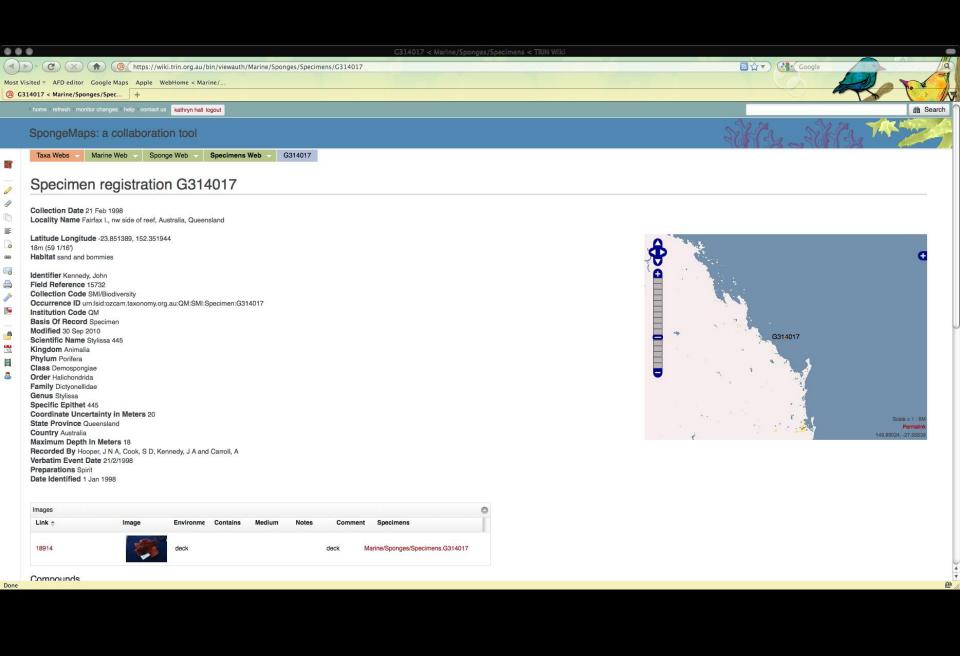
via links to Sponge Barcoding Project

> listed in Specimens

> listed in OTU? Operational Taxonomic Units

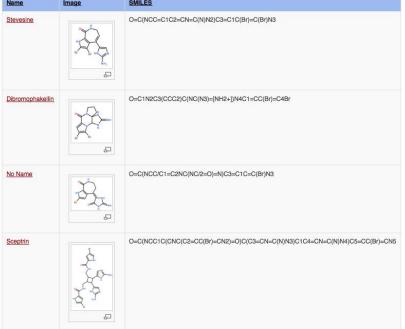


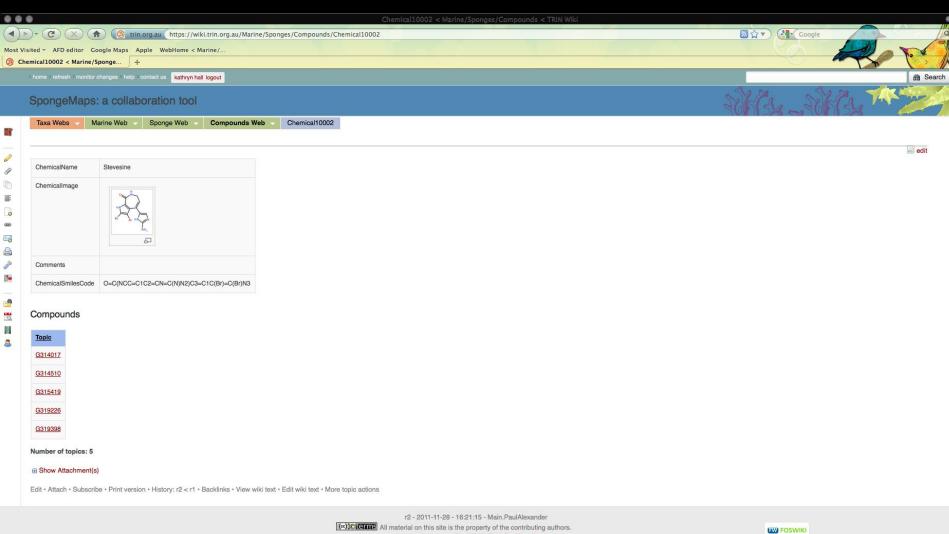




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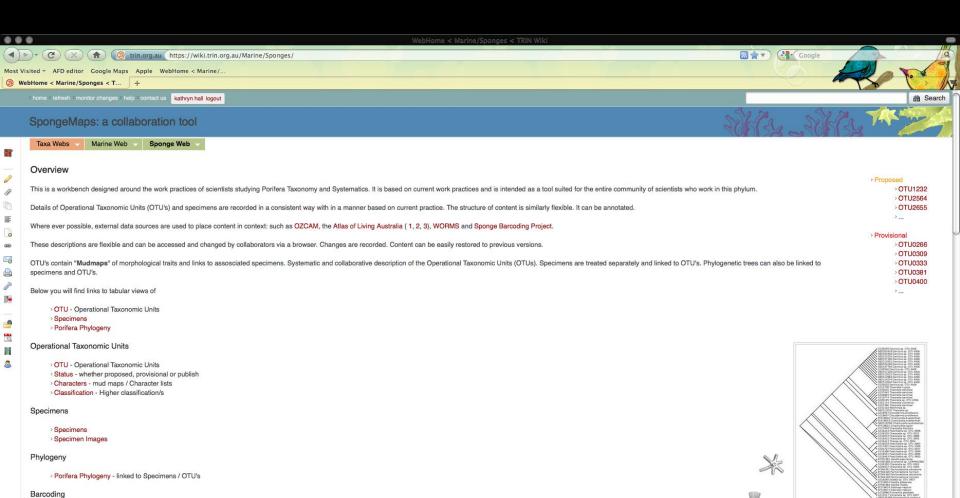






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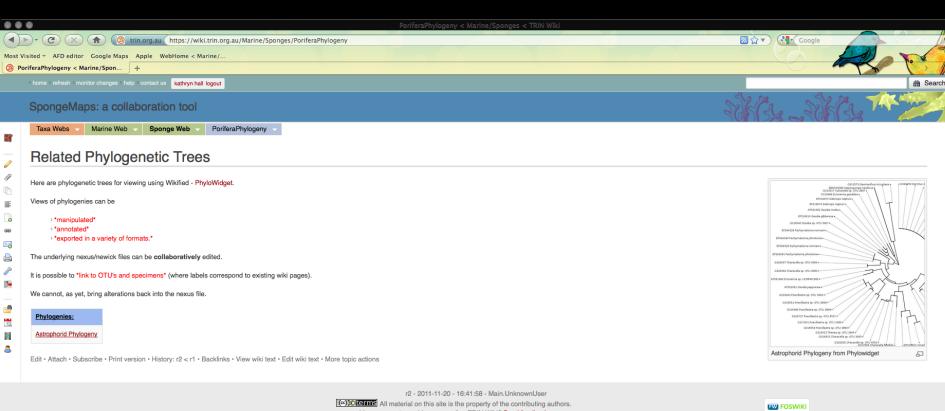
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Compare Phylogenies

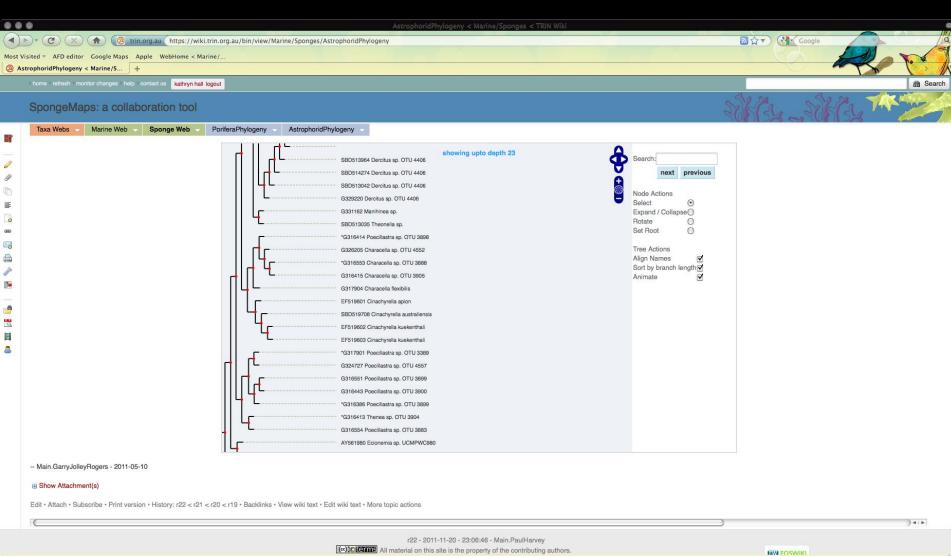
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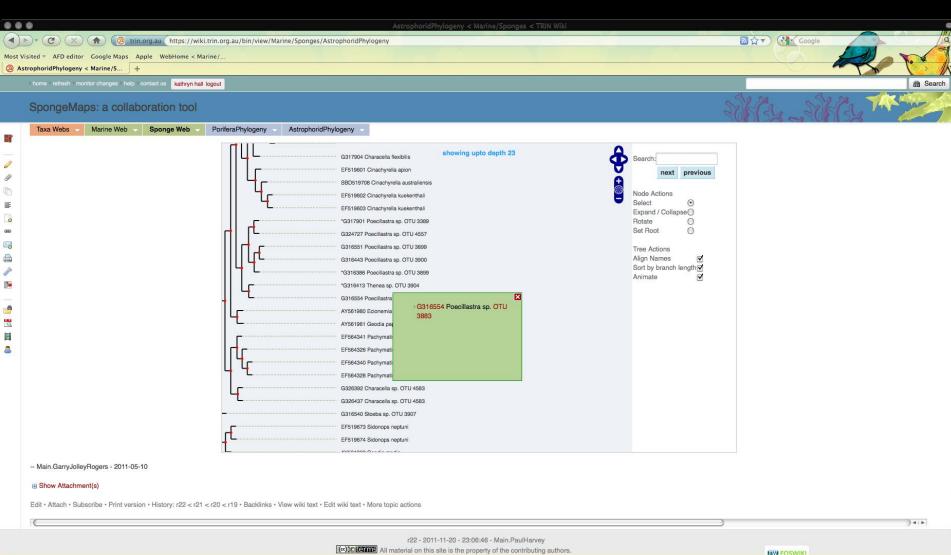
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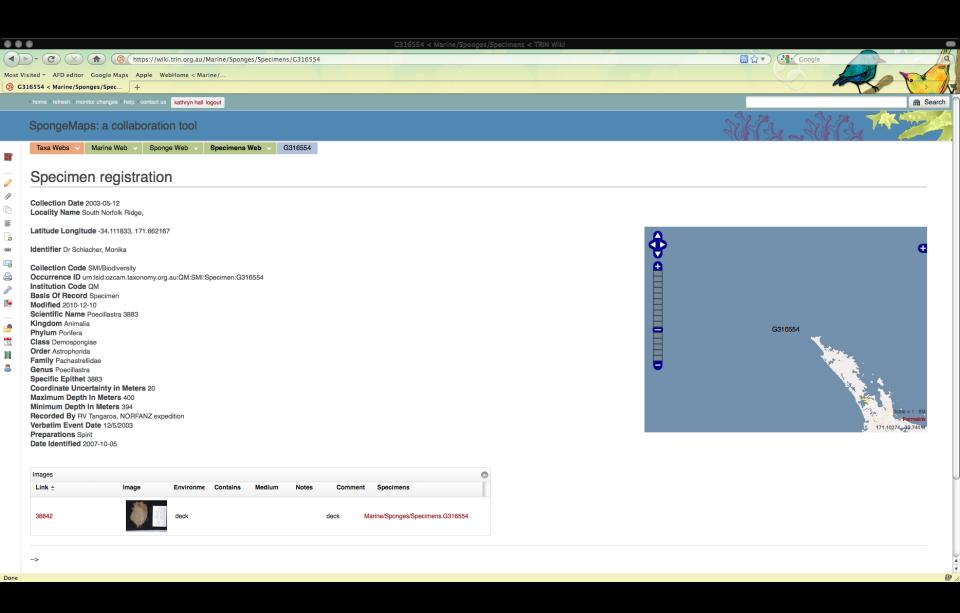
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The Future

SpongeMaps will grow to:

- accommodate additional loci beyond COI to include other mtDNA and rDNA gene regions
- refine taxonomic concepts
- recruit more collaborators
- mapping tools for distribution and ecology
- development as a real-time interactive field guide
- provide current, evidence-based content for online portals, such as:
 - EOL (www.eol.org) and
 - ALA (www.ala.org.au).



