

Ocean Biogeographic Information System (OBIS)

J. Frederick Grassle
Rutgers University
Institute of Marine and Coastal Sciences
71 Dudley Rd.
New Brunswick, NJ 08901
Phone: (732) 932-6555 FAX:732-932-8578 E-mail: Grassle@marine.rutgers.edu

Mark Costello
University of Auckland
Leigh Marine Laboratory
Workworth, NZ
Phone: 64 9422 6111 FAX: 69 9422 6111 x83608 E-mail: m.costello@auckland.ac.nz

Yunqing (Phoebe) Zhang
Rutgers University
Contact information same as above.

OBIS web site: <http://iobis.org>

Web addresses of the Regional OBIS Nodes

Antarctic OBIS	http://www.scarmarbin.be/index.php
OBIS Australia	http://www.obis.org.au
OBIS Canada	http://www.marinebiodiversity.ca/
OBIS China	http://www.iobis.org.cn/index_e.htm
EurOBIS	http://www.marbef.org/data/eurobis.php
Indian Ocean Node of OBIS	http://www.indobis.org/
Southwestern Pacific OBIS	http://nzobis.niwa.co.nz/
OBIS South America	http://obissa.cria.org.br/
Sub-SaharanOBIS	http://afrobis.csir.co.za:8000
US OBIS	http://166.122.60.46:11000 (testing site)

1. 2006 ACCOMPLISHMENTS & SCIENTIFIC HIGHLIGHTS

1. OBIS has far exceeded its predictions and has grown to over 10 million records, 142 databases, and over 71,000 species.
2. OBIS has established 11 regional OBIS nodes (RONs) including a recently-established Antarctic Node. Together they have contributed 40 percent of the total OBIS records and continue to develop and contribute new data the global portal.
3. OBIS Portal has been redesigned and implemented to support improved user interface and functionality.
4. OBIS International, Management, and Technical Committee meetings were held in Manila, the Philippines in May, 2006 where new work plans were developed.

2. SOCIETAL BENEFITS, IMPACT & APPLICATIONS

OBIS data are being used by individual countries to meet their obligations under the Convention on Biological Diversity. OBIS is being used as a source of information by public and private environmental consultants but we presently have no way to quantify this. It will be used by the Global Ocean Observing System.

3. WORK PLANNED FOR 2007

Q1: Jan. 31, 2007

<u>Management</u>	An intensive search will be underway for the OBIS Executive Director. We expect this person to be on board by January 2 nd .
<u>Data Acquisition</u>	The OBIS Southern RONS will complete their contracts from the previous proposal adding an additional 300,000 records to OBIS
<u>User Community</u>	Develop a formal agreement on data exchange and relevant OBIS products with Conservation International
<u>RON Development</u>	Antarctic RON publishing data through OBIS (Zhang)
<u>Portal Service</u>	Mapping biological data in OBIS with World Ocean Atlas Data

Q2. Feb. 1, 2007 – Apr. 31, 2007

<u>Management</u>	OBIS Board will be established (Costello and Executive Director)
<u>Data acquisition</u>	UNEP/WCMC Marine Protected Areas will be provided for searching on the OBIS Portal (Costello, Zhang) Japan Node will be providing data (Shimura)
<u>User Communities</u>	Consider uses of OBIS data to assess the effects of an oil spill in support of a National Resource Damage Assessment in the U.S. (Executive Director)
<u>Portal Service</u>	A capability to find species in OBIS by physical and chemical properties of the water will be implemented on the OBIS portal using the San Diego Supercomputer Center's PAKT integration tool
<u>Partnerships</u>	Formal affiliation with Encyclopedia of Life (EoL) will be established.
<u>Public Education & Outreach</u>	Concepts and goals will be finalized (McDonnell)

Q3 May 1, 2007– July 31, 2007

<u>RON</u>	A RON in the Republic of Korea will be established (Exec. Director)
------------	---

<u>Portal Service</u>	A Global Marine Habitat Classification system will be adopted (Costello) A new version of the OBIS hierarchical classification using common names will be adopted (Rees, Costello) An outlier record detection tool will be integrated into the OBIS data quality report provided by OBIS (Zhang)
<u>Data Acquisition</u>	The ability to search for records in the Smithsonian National Museum of Natural History database will add at least 3 million records to OBIS
<u>Partnerships</u>	Formal affiliation with ZooBank will be established.
<u>Public Education & Outreach</u>	Teaching materials will go through final testing. (McDonnell)
Q4 August 1, 2007-October 31, 2007	
<u>User Community</u>	Ecological and fisheries survey data in metadata standard (Branton)
<u>Portal Service</u>	OBIS taxonomic name service will be dynamically interoperable with Catalogue of Life (ZooBank, UBio, GBIF, ECAT,)
<u>Data Acquisition</u>	Barcode of Life Specimen data will be interoperable with OBIS Field Museum of Natural History marine species data will be served by OBIS
<u>Education & Outreach</u>	On line tutorial of OBIS Portal will be provided to the general public Teaching material will be evaluated publicly

4. EDUCATION & OUTREACH

Three evaluations of the OBIS website were conducted and the website was revamped to make it more accessible to a wider audience. The success of this is evidenced in the increased usage.

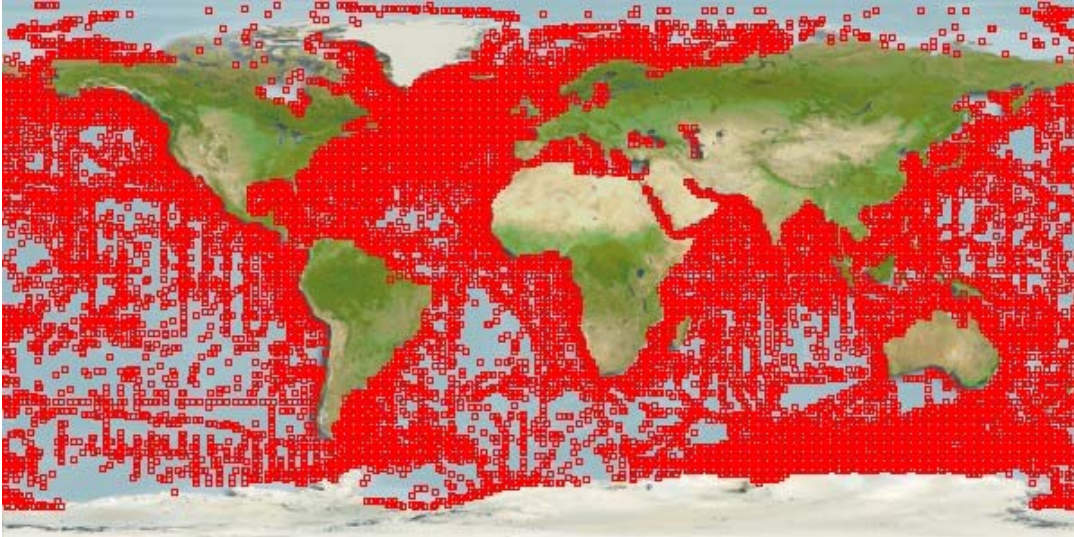
5. EXPANSION OF DATA SETS: ADDRESSING GAPS

The Global coverage of OBIS is described in the picture below. As shown in the picture, data from the Southern Oceans is needed and our continuing relationships with the 8 Regional OBIS Nodes (RON's) will work towards addressing these gaps.

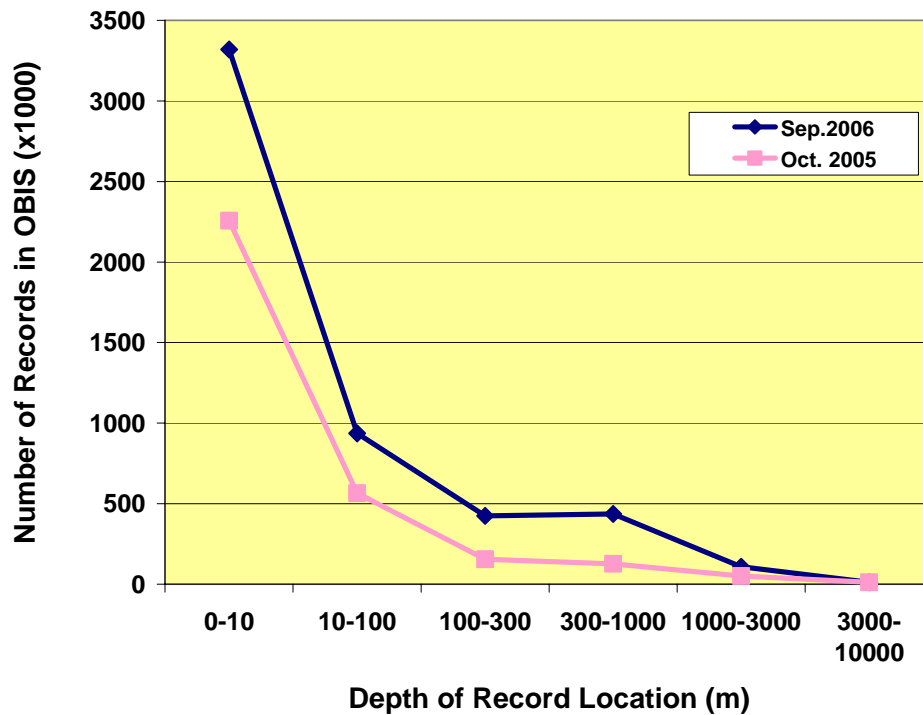
The ArcOD, CAML, CenSeam, ChEss, CMarZ, ICOMM, NaGISA, and MAR-ECO Realm Projects will make a major difference in increasing global coverage over the next year. We expect to receive significant amounts of new data from all the Realm Projects, the Regional OBIS Nodes, and the OBIS

Specialty Nodes (Biogeoinformatics of Hexacorals, CephBase, FishBase, SEAMAP (birds, turtles, and marine mammals), and ZooGene.

OBIS Global Coverage (September 2006)



OBIS Vertical Coverage



OBIS Taxonomic Coverage: see Appendix.

6. PARTNERSHIPS & COLLABORATION

a. Partnerships

Interactions in progress and planned between OBIS and external organizations

Continuing external relationships

Organization (person)

GBIF (Jim Edwards, Dave Remsen, Don Hobern)

ICES (Adi Kellerman, Julie Gillin),

SCOR WG New Technology

SCOR World Register Marine Species

FAO (Marc Taconet),

TDWG (Stan Blum)

IOOS

MMI (John Graybeal)

GCMD (Melanie Meaux)

GEOSS (Douglas Muchoney)

NatureServe (Denny Grossman)

uBIO (Paddy Patterson)

IOC (Peter Pissierssens), IODE (Leslie Rickards)

Diversitas (Dave Rafaellii & secretariat)

IABO (Mark Costello)

Deliverable

Data exchange standards, interoperability, sustainability plan, Intellectual Property policies.

Data publication from ICES members

Continuing dialogue on OBI

Established 1st quarter

Sharing polygon data and species pages

Develop marine metadata standards

Develop marine metadata standards

Develop marine metadata standards

Develop marine metadata standards and dissemination through GCMD

Marine habitat classification

Marine habitat classification

OBIS portal interoperable with uBIO tools

Foster data publication through OBIS from National Ocean Data Centres

Promoting data publication through OBIS

Promoting data publication through OBIS

New relationships with end-users initiated

Organization (person)

Exxon (Miskey Fealey)

IABIN (Douglas Beard, Ivan Valdespino)

WCMC (Ed McManus)

Conservation International (John Farrington, Kent Carpenter) & IUCN (Kristen Martin)

Biodiversity Heritage Alliance (Brewster Kahle)

ESRI (Jack Dangerman)

Deliverable

Data publication

User needs assessments

Working with Regional OBIS Nodes in data exchange and online tools

Use MPA maps as search tool on OBIS, export data

OBIS assist Global Marine Assessment

Develop links from OBIS to literature through the MacArthur Foundation sponsored Encyclopedia of Life.

Close ties with ESRI

b. Links to CoML Ocean Realm Projects

Project Name	Liaison or Cross-over personnel	Nature of Relationship
NaGISA	Robin Rigby	
CReefs	Mary Wakeford	New records received in Aug 2006

GoMA	Nick Wolff	
POST	Bob Branton	
COMARGE	Marie-Claire Fabri	
CeDAMar	Bruno Danis	Data being vetted
CMarZ	Bob Groman	In preparations for adding new data
TOPP	Pat Halpin	
MAR-ECO	Edward Vandenberg	
CenSeam	Karen Stocks	
ChEss	Maria Blanco	
ArcOD	Falk Huettman	Some data in Aug 2006, expecting more early 2007
CAML	Bruno Danis	Several datasets late 2006
ICoMM	David Patterson	

c. Links to CoML National and Regional Implementation Committees (NRICs)

NRIC	Liaison or Cross-over personnel	Nature of Relationship
Australia	Ian Cresswell	
Canada	Paul Snelgrove	
Caribbean	Patricia Miloslavich	
China	SUN Song	
Europe	Graham Schemmield	
Indian Ocean	Mahideen Wafar	
Japan	Yoshihisa Sharayama	
South America	Victor Gallardo	
Sub-Saharan Africa	Charles Griffiths	
USA	Paul Sandifer	

d. Liaisons to CoML Cross-Cutting Groups

Project Name	Liaison Name & Institution	Nature of the Relationship
HMAP	Michaela Barnard	
FMAP	Bob Branton	
SCOR Tech Panel	David Farmer	
E&O	Janice McDonnell	
Barcoding	Phoebe Zhang	

e. Effectiveness of the Partnerships and collaborations

OBIS needs to have better communication with all elements of CoML.

7. APPENDIX

OBIS Taxonomic Coverage:

		Notes to users			
OBIS Taxonomic Categories					
<i>- details last updated 2006-09-20</i>					
<i>Total Records in cache : 10069424</i>					
<i>Number of Data Sources : 142</i>					
Category	No. of Names Held (chiefly marine species)	No. of Species with OBIS Point Data	Number of Records	Approx. no. of Global Species	
<i>All categories</i>	159424 list names	71252 list taxa	8068370	3.5 million? [200000+ marine]	clickable map
Vertebrates	24387 list names	21153 list taxa	3688989	40000 [14170 marine]	clickable map
Mammals	185 list names	156 list taxa	328492	4500 [115 marine]	clickable map
Cetaceans	133 list names	117 list taxa	176759	115 [110 marine]	clickable map
Whales	59 list names	54 list taxa	116692	72 [72 marine]	clickable map
Porpoises	9 list names	8 list taxa	24126	6 [6 marine]	clickable map
Dolphins, small toothed whales	65 list names	55 list taxa	35941	37 [32 marine]	clickable map
Seals, sea lions, walruses	44 list names	35 list taxa	149639	33 [33 marine]	clickable map
Dugongs, manatees	6 list names	2 list taxa	15	5 [5 marine]	clickable map
Sea otters	2 list names	2 list taxa	2079	1 [1 marine]	clickable map
Birds	756 list names	601 list taxa	788634	9000 [292 marine]	clickable map
Reptiles	49 list names	44 list taxa	22117	6000 [61 marine]	clickable map
Crocodiles	3 list names	2 list taxa	5	?? [1 marine]	clickable map
Snakes	30 list names	30 list taxa	35	?? [52 marine]	clickable map
Iguanas	1 list names	0	0	700 [1 marine]	

Turtles	15 list names	12 list taxa	22077	200 [7 marine]	clickable map
Amphibians	85 list names	1 list taxa	1	2500 [?? marine]	clickable map
Fishes	23312 list names	20351 list taxa	2549745	27000 [13713 marine]	clickable map
Ray-finned fishes	21750 list names	18984 list taxa	2287135	?? [?? marine]	clickable map
Lobe-finned fishes (coelacanths, lungfishes)	5 list names	4 list taxa	140	?? [?? marine]	clickable map
Sharks, rays and chimaeras	1457 list names	1279 list taxa	257390	?? [?? marine]	clickable map
Lampreys, hagfishes	100 list names	84 list taxa	5080	?? [?? marine]	clickable map
Invertebrates (any)	84304 list names	42505 list taxa	3044013	?? [?? marine]	clickable map
Lancelets	18 list names	12 list taxa	3206	20 [?? marine]	clickable map
Tunicates	784 list names	525 list taxa	58440	1286 [1286 marine]	clickable map
Larvaceans	0	0	0	?? [?? marine]	
Salps	39 list names	35 list taxa	2617	30 [30 marine]	clickable map
Sea squirts (ascidians)	700 list names	445 list taxa	45465	1200 [1200 marine]	clickable map
Appendicularians	45 list names	45 list taxa	10358	?? [?? marine]	clickable map
Acorn worms (hemichordates)	109 list names	28 list taxa	298	89 [89 marine]	clickable map
Echinoderms	2006 list names	1416 list taxa	92698	6199 [6199 marine]	clickable map
Ophiuroids (brittle, basket stars)	552 list names	379 list taxa	32960	2230 [2230 marine]	clickable map
Sea stars	500 list names	312 list taxa	32067	1300 [1300 marine]	clickable map
Crinoids	46 list names	31 list taxa	3827	618 [618 marine]	clickable map
Echinoids	240 list names	158 list taxa	16104	903 [903 marine]	clickable map
Sea cucumbers	668 list names	536 list taxa	7740	1147 [1147 marine]	clickable map
Arrow worms (chaetognaths)	184 list names	98 list taxa	56102	105 [105 marine]	clickable map
Entoprocts	22 list names	13 list taxa	201	151 [151 marine]	clickable map
Brachiopods	148 list names	95 list taxa	1276	239 [239 marine]	clickable map
Bryozoans	1375 list	704 list taxa	40740	6000 [6000]	clickable

	names			marine]	map
Phoronids	19 list names	16 list taxa	3617	10 [10 marine]	clickable map
Pentastomids	0	0	0	90 [3 marine]	
Arthropods	28765 list names	11040 list taxa	1655383	800000 [33961 marine]	clickable map
Crustaceans	27480 list names	10831 list taxa	1651372	39000 [30465 marine]	clickable map
Malacostracan crustaceans	20590 list names	7912 list taxa	350776	23000 [18931 marine]	clickable map
Decapods (shrimp, lobsters, crabs)	4953 list names	3044 list taxa	157545	10000 [8227 marine]	clickable map
Euphausiids (krill)	132 list names	122 list taxa	23657	85 [85 marine]	clickable map
Amphipods	3403 list names	2095 list taxa	91850	60000 [4172 marine]	clickable map
Iso pods	9798 list names	1520 list taxa	33138	4200 [4200 marine]	clickable map
Tanaidacean crustaceans	671 list names	262 list taxa	6317	?? [372 marine]	clickable map
Thermosbaenacean crustaceans	0	0	0	9 [4 marine]	
Spelaeogriphacean crustaceans	0	0	0	?? [?? marine]	
Cumaceans	576 list names	405 list taxa	19087	?? [800 marine]	clickable map
Mysids	911 list names	347 list taxa	18422	709 [709 marine]	clickable map
Mantis shrimps	124 list names	100 list taxa	271	344 [344 marine]	clickable map
Leptostracan crustaceans	21 list names	16 list taxa	488	12 [12 marine]	clickable map
Amphionid crustaceans	0	0	0	1 [1 marine]	
Barnacles	530 list names	355 list taxa	24995	1025 [?? marine]	clickable map
Branchyuran crustaceans	31 list names	9 list taxa	9	?? [?? marine]	clickable map
Copepods	4677 list names	1954 list taxa	1225283	8400 [7353 marine]	clickable map
Ostracods	1119 list names	433 list taxa	18255	5650 [3150 marine]	clickable map
Branchiopods (fairy shrimps etc.)	517 list names	154 list taxa	31982	820 [6 marine]	clickable map
Remipedian crustaceans	0	0	0	1 [1 marine]	
Cephalocarid crustaceans	5 list names	3 list taxa	31	9 [9 marine]	clickable map
Chelicerates	1285 list	209 list taxa	4011	30000 [976	clickable

	names			marine]	map
Sea spiders	1280 list names	205 list taxa	3994	972 [972 marine]	clickable map
Horseshoe crabs	5 list names	4 list taxa	17	4 [4 marine]	clickable map
Onychophorans	0	0	0	80 [?? marine]	
Tardigrades	204 list names	29 list taxa	56	400 [98 marine]	clickable map
Pogonophorans	155 list names	45 list taxa	327	150 [110 marine]	clickable map
Annelids	7064 list names	4892 list taxa	392738	11500 [8192 marine]	clickable map
Leeches	181 list names	53 list taxa	79	500 [?? marine]	clickable map
Oligochaetes	574 list names	178 list taxa	9690	3000 [611 marine]	clickable map
Polychaetes	6309 list names	4661 list taxa	382969	8000 [7365 marine]	clickable map
Echiurans	199 list names	67 list taxa	299	137 [137 marine]	clickable map
Mollusks	21615 list names	13325 list taxa	458620	100000 [32909 marine]	clickable map
Monoplacophora	2 list names	0	0	11 [11 marine]	
Aplacophora	78 list names	24 list taxa	2033	264 [264 marine]	clickable map
Chitons	331 list names	211 list taxa	5454	500 [?? marine]	clickable map
Gastropods	15351 list names	9278 list taxa	256299	75000 [25000 marine]	clickable map
Bivalves	4521 list names	2935 list taxa	139957	20000 [5824 marine]	clickable map
Scaphopods	288 list names	148 list taxa	3042	350 [350 marine]	clickable map
Cephalopods	1044 list names	729 list taxa	51835	786 [786 marine]	clickable map
Nautiluses	6 list names	3 list taxa	36	?? [?? marine]	clickable map
Squids	543 list names	397 list taxa	42295	?? [?? marine]	clickable map
Octopuses	350 list names	213 list taxa	3452	?? [?? marine]	clickable map
Cuttlefishes	142 list names	114 list taxa	6050	?? [?? marine]	clickable map
Sipunculans	218 list names	132 list taxa	6414	898 [898 marine]	clickable map
Priapulids	20 list names	6 list taxa	1068	17 [17 marine]	clickable map
Kinorhynchs	126 list	9 list taxa	10	120 [86 marine]	clickable

	names				map
Loriciferans	11 list names	7 list taxa	7	10 [10 marine]	clickable map
Acanthocephalans	977 list names	47 list taxa	70	700 [217 marine]	clickable map
Rotifers	1089 list names	87 list taxa	563	1700 [164 marine]	clickable map
Cycliophorans	1 list names	1 list taxa	4	?? [?? marine]	clickable map
Hairworms	17 list names	1 list taxa	1	80 [?? marine]	clickable map
Nematodes	4600 list names	2166 list taxa	10478	12000 [4220 marine]	clickable map
Gastrotrichs	717 list names	166 list taxa	199	200 [241 marine]	clickable map
Mesozoans	111 list names	0	0	50 [35 marine]	
Gnathostomulids	98 list names	12 list taxa	13	50 [50 marine]	clickable map
Nermerteans	307 list names	132 list taxa	4078	787 [787 marine]	clickable map
Flatworms	0	0	0	5600 [6795 marine]	
Comb jellies	169 list names	17 list taxa	2584	80 [80 marine]	clickable map
Cnidarians (sea anemones, corals, hydrozoans, jellyfishes)	9167 list names	6525 list taxa	215985	9400 [7598 marine]	clickable map
Anthozoans (sea anemones, corals, soft corals, etc.)	6407 list names	5239 list taxa	137719	6500 [?? marine]	clickable map
Hexacorals (sea anemones, stony corals, black corals)	5822 list names	5020 list taxa	126010	2187 [2187 marine]	clickable map
Sea anemones	2725 list names	2482 list taxa	44789	1000 [1000 marine]	clickable map
Stony corals	2841 list names	2435 list taxa	80794	?? [?? marine]	clickable map
Black corals	255 list names	102 list taxa	426	?? [?? marine]	clickable map
Octocorals (soft corals, sea pens and allies)	584 list names	218 list taxa	11708	?? [?? marine]	clickable map
Soft corals	56 list names	28 list taxa	6620	?? [?? marine]	clickable map
Sea fans, sea whips	285 list names	112 list taxa	658	?? [?? marine]	clickable map
Blue corals	7 list names	2 list taxa	14	?? [?? marine]	clickable map
Organ-pipe corals	3 list names	2 list taxa	15	?? [?? marine]	clickable

					map
Sea pens	233 list names	74 list taxa	4401	?? [?? marine]	clickable map
Scyphozoan jellyfishes	199 list names	93 list taxa	2056	250 [250 marine]	clickable map
Box jellies	13 list names	10 list taxa	54	?? [?? marine]	clickable map
Hydrozoans	2548 list names	1183 list taxa	76156	3000 [?? marine]	clickable map
Placozoans	1 list names	0	0	1 [1 marine]	
Sponges	1889 list names	612 list taxa	38133	5000 [5000 marine]	clickable map
Angiosperms	56 list names	16 list taxa	957	230000 [50 marine]	clickable map
Seagrasses	56 list names	16 list taxa	957	50 [50 marine]	clickable map
Gymnosperms	0	0	0	?? [?? marine]	
Ferns and allies	0	0	0	?? [?? marine]	
Bryophytes	0	0	0	?? [?? marine]	
Charophytes	0	0	0	?? [?? marine]	
Macroalgae (seaweeds)	12505 list names	2485 list taxa	185195	?? [?? marine]	clickable map
Green algae (green seaweeds)	2729 list names	548 list taxa	21247	6000 [1104 marine]	clickable map
Brown algae (brown seaweeds)	2507 list names	649 list taxa	56877	1000 [?? marine]	clickable map
Red algae (red seaweeds)	7269 list names	1288 list taxa	107071	2500 [?? marine]	clickable map
Microalgae (pigmented protists)	21926 list names	4272 list taxa	1092769	?? [?? marine]	clickable map
Dinoflagellates	1725 list names	972 list taxa	343315	2500 [2000 marine]	clickable map
Euglenoids	606 list names	131 list taxa	807	450 [10 marine]	clickable map
Chrysophytes	746 list names	46 list taxa	26245	?? [62 marine]	clickable map
Glaucophytes	11 list names	0	0	?? [?? marine]	
Raphidophytes	5 list names	0	0	?? [5 marine]	
Diatoms	10346 list names	2743 list taxa	705870	10000 [8000 marine]	clickable map
Eustigmatophytes	3 list names	0	0	?? [3 marine]	
Xanthophytes	209 list names	7 list taxa	226	?? [100 marine]	clickable map
Prymnesiophytes	163 list names	43 list taxa	6605	?? [500 marine]	clickable map
Cryptomonads	90 list	22 list taxa	682	?? [28 marine]	clickable

	names				map
Unicellular green microalgae	4200 list names	135 list taxa	4487	?? [?? marine]	clickable map
Microalgae - unassigned	3822 list names	173 list taxa	4532	?? [?? marine]	clickable map
Protozoans (colourless protists)	2380 list names	749 list taxa	48859	32000 [?? marine]	clickable map
Choanoflagellates	40 list names	11 list taxa	266	?? [?? marine]	clickable map
Amoeboid protozoa	1645 list names	434 list taxa	38297	?? [?? marine]	clickable map
Amoebae	86 list names	14 list taxa	18	?? [19 marine]	clickable map
Foraminifera	1558 list names	419 list taxa	38257	4000 [4000 marine]	clickable map
Kinetoplastid protozoans	19 list names	2 list taxa	27	?? [?? marine]	clickable map
Ebridians	6 list names	2 list taxa	367	?? [?? marine]	clickable map
Ciliates	589 list names	288 list taxa	9631	7200 [1667 marine]	clickable map
Apicomplexa (protozoans)	0	0	0	?? [866 marine]	
Bicosoecids (protozoans)	2 list names	0	0	?? [?? marine]	
Protozoa - unassigned	79 list names	12 list taxa	271	?? [?? marine]	clickable map
Fungi	0	0	0	?? [?? marine]	
Bacteria (including Cyanobacteria)	75 list names	72 list taxa	7588	?? [?? marine]	clickable map
Green nonsulfur bacteria	0	0	0	?? [?? marine]	
Gram positive bacteria	0	0	0	?? [?? marine]	
Purple bacteria	0	0	0	?? [?? marine]	
Cyanobacteria	61 list names	59 list taxa	7251	1500 [?? marine]	clickable map
Flavobacteria	0	0	0	?? [?? marine]	
Archaea	0	0	0	?? [?? marine]	
Halophiles	0	0	0	?? [?? marine]	
Methanophiles	0	0	0	?? [?? marine]	
Thermophiles	0	0	0	?? [?? marine]	
Viruses	0	0	0	?? [?? marine]	
unassigned	13791 list names	0	0	?? [?? marine]	

