Scoping –

A scoping exercise was undertaken as part of protocol development in February 2015. Search strings were trialled and refined in Web of Science initially, then Scopus as outlined below. When search strings were tested the number of hits were recorded and the first 200 titles ordered by relevance (or all results, whichever was smaller) were reviewed. The results were then searched for the titles of test library papers. If a paper failed to be found the authors and date of the paper were used as a second search. If the paper was still not found it was recorded as a failed retrieval. The number of accessible papers retrieved was then reported for the search string. When comparing search strings a higher retrieval rate was considered more valuable than a smaller number of hits. When a paper is referred to specifically the number correlates with the label in the test library.

The scoping exercise is reported in the following format:

Search element ID) Search term – Hits, Number of returned articles from test library. comments.

Web of science – 33/36 test library entries present.

SUBJECT:

1) “Mesophotic Coral Ecosystem” – 21, 3/33 from test library.
   New species records, very few results.

2) Mesophotic – 131, 9/33 from test library.
   Additional relevant titles. Lots of genetic studies.

**1) OR 2) = 2). Reject “Mesophotic Coral Ecosystem”**

3) “Deep reef” – 180
   5/33 from test library.
   Additional relevant titles. Struggling to pick up submersible studies so far.

** 2) OR 3) returns 300 with 12/33 from test library. Retain “Deep reef”**

4) Submersibl* OR submarine* - 62,767, 7/33 from test library. 5 new
   Unwieldy number of results, given return rate.

5) ((Submersibl* OR submarine*) AND (biolog* OR Reef* OR Cora* OR Spong* OR Alga* OR Fish*)) -10,346
   7/33 from test library
   Significant improvement but further refinement worth attempting.

6) ((Submersibl* OR submarine*) AND Tropical AND (biolog* OR Reef* OR Cora* OR Spong* OR Alga* OR Fish*)) -171
   1/33 from test library
   Lack of sensitivity, Tropical deemed an inappropriate addition.
**2) OR 3) OR 5) returns 11,016 with 19/33 from the test library, retain submarine study capture terms**

**Same search in Scopus returns 32,742 with 18/33 but 4 new. Both searches combined retrieve 23, Scoping continues in Scopus**

7) 2) OR 3) OR 5) OR “Deep water” – 107,665, 
Unwieldy number of results

8) 2) OR 3) OR 5) OR “Deep water” (qualified as 5)) – 67,25 
23/33 from test library 
5 new, deep water term is useful

** No new results when search string ran in Web of Science -27, 514, 28/33 retrieved from combined search. Retain Deep water term.**

** last 5 missing test papers are reviewed to identify potentially useful terms in the abstract**

9) Modify qualifying terms to include ‘Hermatyp*’ targets missing paper (6) – 27,514, 
Fails to capture targeted paper in Web of Science. 
Fails to capture targeted paper in Scopus.

** Reject Hermatyp* qualifier **

10) Modify submersible* to submer* targets missing paper (7) with submerged in the abstract – 56,164 
Fails to capture targeted paper in Web of Science. 
Target doesn’t appear available in Scopus.

**Reject Submersibl* modification **

The remaining 3 missing papers present in the databases were entered without abstracts. A google search retrieved the abstracts. Useful terms were not identified

Two other papers were not present in either database and represent grey literature. These papers may be captured in other depositories.

Circulated search string:

(Mesophotic) OR (“Deep reef”) OR ((Submersibl* OR submarine*) AND (biolog* OR Reef* OR Cora* OR Spong* OR Alga* OR Fish*)) OR ((“Deep water”) AND (biolog* OR Reef* OR Cora* OR Spong* OR Alga* OR Fish*))

Deemed appropriate capturing 84% of accessible test library from test sources.

An advisory committee was arranged and presented with the above search string. An additional 5 papers were added to the test library, published before the term mesophotic was coined. The Capture rate for these new papers was 100%. As well as more test papers the following search terms were suggested and trialled in Scopus.
11) \((\text{Trimix}) \text{ AND } (\text{biolog}^* \text{ OR Reef}^* \text{ OR Cora}^* \text{ OR Spong}^* \text{ OR Alga}^* \text{ OR Fish}^*))\) – 23

some new relevant results

**Accept term Trimix with filter**

12) \((\text{“Technical diving”}) \text{ AND } (\text{biolog}^* \text{ OR Reef}^* \text{ OR Cora}^* \text{ OR Spong}^* \text{ OR Alga}^* \text{ OR Fish}^*))\) – 7
Irrelevant hits

13) \((\text{“mixed gas diving”}) \text{ AND } (\text{biolog}^* \text{ OR Reef}^* \text{ OR Cora}^* \text{ OR Spong}^* \text{ OR Alga}^* \text{ OR Fish}^*))\) – 4
Irrelevant hits

14) \((\text{rebreather}) \text{ AND } (\text{biolog}^* \text{ OR Reef}^* \text{ OR Cora}^* \text{ OR Spong}^* \text{ OR Alga}^* \text{ OR Fish}^*))\) - 21
no new relevant terms

15) \((\text{CCR OR “Closed Circuit Rebreather”}) \text{ AND } (\text{biolog}^* \text{ OR Reef}^* \text{ OR Cora}^* \text{ OR Spong}^* \text{ OR Alga}^* \text{ OR Fish}^*))\) - 728
large number of medical studies, remove CCR

16) \((\text{“Closed Circuit Rebreather”}) \text{ AND } (\text{biolog}^* \text{ OR Reef}^* \text{ OR Cora}^* \text{ OR Spong}^* \text{ OR Alga}^* \text{ OR Fish}^*))\) - 5
none new

After advisory committee feedback incorporate 11) and finalise search string as

\((\text{Mesophotic}) \text{ OR “Deep reef”} \text{ OR ((Submersibl}^* \text{ OR submarine}^*) \text{ AND } (\text{biolog}^* \text{ OR Reef}^* \text{ OR Cora}^* \text{ OR Spong}^* \text{ OR Alga}^* \text{ OR Fish}^*)) \text{ OR ((“Deep water”) AND } (\text{biolog}^* \text{ OR Reef}^* \text{ OR Cora}^* \text{ OR Spong}^* \text{ OR Alga}^* \text{ OR Fish}^*)) \text{ OR ((Trimix) AND } (\text{biolog}^* \text{ OR Reef}^* \text{ OR Cora}^* \text{ OR Spong}^* \text{ OR Alga}^* \text{ OR Fish}^*))\)

This can be more succinctly expressed as:

\((\text{Mesophotic OR “Deep reef” OR ((Submersibl}^* \text{ OR submarine}^* \text{ OR “Deep water” OR Trimix) AND } (\text{biolog}^* \text{ OR Reef}^* \text{ OR Cora}^* \text{ OR Spong}^* \text{ OR Alga}^* \text{ OR Fish}^*))\)

Capturing 87% of accessible updated test library from test sources