

## Working Group Report to SCOR (2020)

### 1. Name of group

#### **C-GRASS: Coordinated Global Research Assessment Of Seagrass Systems**

(Co-leads: Emmett Duffy, Lauren Weatherdon)

### 2. Activities since previous report to SCOR (e.g., virtual or in-person meetings, email discussions, special sessions). Limit 1000 words

Virtual coordination meetings and working groups have been held to advance the core objectives of C-GRASS.

We successfully planned our first C-GRASS international workshop as a joint meeting, in collaboration with the MBON Pole-to-Pole group, to be held at INVEMAR in Santa Marta, Colombia in early May 2020. That meeting had to be cancelled in March due to COVID-19 restrictions.

Our major work since then has involved rebooting the plan to adapt to a completely virtual workshop process. We recently circulated an invitation to group members for the first virtual workshop, expected to be held in July-August 2020. We assigned members of C-GRASS as members of four core teams, with proposed coordinators as follows:

1. **Data analysis and synthesis:** This team will identify opportunities for collating and synthesizing seagrass data and corresponding metadata to fill gaps in knowledge.  
*Coordinators: Jon Lefcheck, Erin Satterthwaite, Sara Pruckner, Maria Potouroglou*
2. **Best practices:** This team is developing monitoring protocols for *in situ* and remote sensing monitoring of seagrasses. *Coordinators: Chris Roelfsema, Frank Muller-Karger, Len McKenzie, Fred Short, Richard Unsworth, Jon Lefcheck*
3. **Data schema:** This team is developing data schema templates to accommodate the 'seagrass cover and composition' Essential Ocean Variable and its corresponding sub-variables, while aligning with OBIS' DarwinCore schema (including controlled vocabulary and metadata structure). An initial draft was created by UNEP-WCMC, as the next evolution of the '[Global Distribution of Seagrasses](#)' dataset, which will be further reviewed and expanded to reflect data collected across multiple scales. *Coordinators: Ward Appeltans, Michael Lonneman, Jon Lefcheck, Sara Pruckner, Lauren Weatherdon*
4. **Community of Practice group:** This team is identifying and illustrating partnerships, roles and responsibilities along the seagrass data supply chain, complementing the activities of the 'Data sources' group, and including discussion of how to incentivize data provision.  
*Coordinators: Erin Satterthwaite, Sara Pruckner*

These teams will be charged with developing draft procedures and templates, and with helping develop the specific agendas for their working groups during the project. These documents will be discussed during the plenary meetings of the first workshop. PIs Emmett Duffy and Lauren Weatherdon will contribute to each of these working groups.

3. Documents published since previous report to SCOR (e.g., peer-reviewed journal articles, reports, Web pages) and should be limited to publications that resulted directly from WG activities and which acknowledge SCOR support

A related activity than many members of the WG—including the co-PIs—participated in involved the production and launch of the *Out of the Blue* global seagrass synthesis report. While not a direct output of the C-GRASS WG, the report will form the basis of the WG’s work moving forward. Further details and content can be found here: <https://www.unenvironment.org/resources/report/out-blue-value-seagrasses-environment-and-people>.

A further output linked to the WG is the first draft of the proposed **data schema** (aligning with the DarwinCore standard) to complement monitoring protocols and support data collation and integration into open access databases. This draft has not yet been formally published but will be used to inform discussions during the upcoming workshop.

Following the workshop, the resulting templates and procedures will be used to form the basis of a peer-reviewed journal article, with the aim to publish the updated dataset, methodology and schema in *Nature Scientific Data* (or equivalent).

4. Progress toward achieving group’s terms of reference. List each term of reference separately and describe progress on each one. Limit 1000 words

Specific progress toward the group’s terms of reference include:

**1. Collate, synthesis and analyze seagrass data:**

UNEP/GRID-Arendal released *Out of the Blue*, a global seagrass synthesis report, in June 2020 with contributions from several C-GRASS group members. Building on that report our working group has begun to identify seagrass data sources and build on known data gaps. We are also reviewing possible data licenses (e.g. Creative Commons), Data Contributor Agreements, and data schema (see #3) for use when collating appropriate data, which we expect to begin shortly.

**2. Produce a handbook of standard protocols and best practices:**

A coordination team has been established to draft **common protocols and best practices** for *in situ* and remote sensing monitoring of seagrasses, building on their existing knowledge and practices.

For remote sensing, team member Heidi Dierssen is contributing to or leading two manuscripts resulting from international workshops and data comparisons sponsored by the Alliance for Coastal Technologies working group on hyperspectral remote sensing: “**Methodological Considerations for Hyperspectral Remote Sensing of Benthic Habitats**” and “**Best Practices for Use of Hyperspectral Imaging in Coastal Environments.**”

**3. Promote development of standardized vocabularies and data schemas:**

Our working group is in the process of developing a shared **data schema** aligning with the DarwinCore standard, including corresponding controlled vocabulary for the ‘seagrass cover and composition’ Essential Ocean Variable’s sub-variables. This will facilitate integration of data into the Ocean

Biogeographic Information System (OBIS) and other open-access portals, such as UNEP-WCMC's Ocean+ initiative (e.g. Ocean Data Viewer). An initial draft has been compiled and is currently being reviewed by the core team, before being circulated to the broader C-GRASS network.

#### 4. Organize an interdisciplinary community of practice:

Our group has established a community of practice, linking with existing networks (e.g. the International Seagrass Experts Network; the World Seagrass Association; SeagrassNet; SeagrassWatch; MarineGEO), and we are also reaching out to the newly formed Seagrass Community of Practice organized by the Coastal and Estuarine Research Federation. Our group is currently mapping **data flows** to facilitate integration of existing seagrass data into national and global inventories.

#### 5. WG activities planned for the coming year. Limit 500 words

- Trial formatting of data for integration into the Ocean Biogeographic Information System (OBIS).
- Draft and publish seagrass *in situ* and remote sensing monitoring protocols, to be uploaded to the Ocean Data Standards and Best Practices Project of IODE.
- Complete map of data flows.
- Hold a virtual workshop (via Zoom) to advance C-GRASS' terms of reference and finalise products (e.g. data schema, monitoring protocols).
- Collate and curate an updated version of the 'Global Distribution of Seagrasses' dataset, aligning with the revised data schema.
- Draft a peer-reviewed journal article presenting a comprehensive global analysis of the SeagrassNet global dataset as a quantitative foundation for the group's continuing analysis.
- Draft a peer-reviewed journal article for *Nature Scientific Data*, to mark the re-launch of a global seagrass dataset based on IOC-UNESCO GOOS' 'Seagrass Cover and Composition' EOV.
- Hold the first in-person workshop, ideally in association with an international meeting that draws our community (date and location to be determined in light of the COVID-19 outbreak).

#### 6. Is the group having difficulties expected in achieving terms of reference or meeting original time schedule? If so, why, and what is being done to address the difficulties Limit 200 words

See above. The global pandemic, COVID-19, has made it necessary to adapt our approach and in-person meeting schedule for the coming months. We are currently planning to hold a virtual workshop, with breakout groups facilitated by the video conferencing software, Zoom. While this may affect our ability to work effectively as a group, we also envision that it will offer an opportunity to expand the participant group to include those who would otherwise be unable to travel due to costs or time commitments.

We will monitor the global situation and schedule an in-person workshop once feasible, ideally in conjunction with the MBON Pole-to-Pole group as we had planned in Colombia in May 2020. We will also explore scheduling one of our later workshops in association with the [World Seagrass Conference and International Seagrass Biology Workshop](#), currently rescheduled to (northern) summer 2022.

#### 7. Any special comments or requests to SCOR. Limit 100 words.

We anticipate that COVID-19 restrictions will continue to influence our ability to implement the C-GRASS plan for many months, and perhaps years, to come. We are confident we can make progress beginning with virtual workshops as described above, but the path forward will surely evolve as we learn how to work effectively in the new world. This will require flexibility from all parties.

Additional information can be submitted and will be included in the background book for the SCOR meeting at the discretion of the SCOR Executive Committee Reporter for the WG and the SCOR Secretariat.