**What is the Living Benthos?**
The living benthos refers to sessile organisms that live on the seafloor. Together with geologic substrate, the living benthos creates structure and complexity, providing essential habitat for fish and invertebrates. This project sought to quantify this biogenic habitat from underwater video data.

**Developing a New Protocol**

Group biogenic habitat into 5 habitat classes

<table>
<thead>
<tr>
<th>Habitat</th>
<th>Score</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canopy</td>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>&lt; 5% of cover</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>5 – 25%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>26 – 50%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>51 – 75%</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>76 – 100%</td>
</tr>
</tbody>
</table>

**Score % cover of each class into one of 6 index scores**

- **Canopy**: Canopy-forming; typically only stipes and holdfasts in view
- **Midstory**: Structure >25cm in height; typically kelps; blades in view
- **Understory**: 5-25cm in height; small kelps and sessile inverts (Metridium, tunicates)
- **Turf/Crust**: <5cm in height; encrusting inverts (coralline algae, sponges)
- **Seagrass**: Flowering plants in the order Alismatales

**Why not ID to species?**

- Poor visibility; low taxonomic distinctness

**Testing Protocol in the Lab**

Q1: Are scores consistent among multiple video reviewers?

All reviewers were statistically similar. All reviewers had mean error values within one index score of the true value (k=0.5).

Q2: Can each biogenic class be scored correctly?

As habitat height decreases, reviewer error increases.

**Applying the Protocol**

Greater biogenic abundance and complexity correlates with higher fish abundance (MaxN) and species richness.

**Lessons Learned and Next Steps**

- This protocol was applied to habitats where biogenic structure falls within the established categories (i.e. shallow rocky reefs), but can be adapted to other systems.
- Though video landers were explicitly evaluated here, this approach could be applied to a variety of video platforms (e.g., ROV).
- This project demonstrates the utility of using video to quantify both geologic and biogenic habitat structure to generate species-habitat associations.
- Moving forward, we will investigate biogenic structure’s role in influencing species composition and occurrence across an array of diverse habitats.

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