Developing a computer vision method to quantify impact on seabed of bottom gillnets

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Developing a computer vision method to quantify impact on seabed of bottom gillnets

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RESULTS

MATERIAL & METHODS

INTRODUCTION

Look at seabed penetration of the leadline

Test for significant differences between heavy and light nets, and correlate with current measurements

EXPECTED OUTPUTS & NEXT STEPS

- Current during the experiment lower than the average range in coastal Danish waters (0.26 to 0.77 m/s) (National Geospatial-Intelligence Agency, 2013)
- 7 runs (Table 1) (Fig. 5 and 6)

DATA COLLECTION AT SEA

- Light and heavy commercial bottom set gillnets
- Sandy bottoms, shallow waters
- Stereo imaging recording unit (Fig. 1 and 2): cameras take synchronized images from slightly different perspectives and allow to estimate the distance to an object as in human vision
- Simultaneous sea current measurement (Fig. 3)

DATA ANALYSIS

- Processing of stereo clips (Fig. 4)
- Statistical analysis

PRELIMINARY RESULTS

- 7 runs (Table 1) (Fig. 5 and 6)
- Current during the experiment lower than the average range in coastal Danish waters (0.26 to 0.77 m/s) (National Geospatial-Intelligence Agency, 2013)

DATA TABLE

<table>
<thead>
<tr>
<th>Run</th>
<th>Date</th>
<th>water depth (m)</th>
<th>Net</th>
<th>Recording unit</th>
<th>tripod location</th>
<th>Framerate (fps)</th>
<th>Resolution</th>
<th>Speed (m/s)</th>
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<tbody>
<tr>
<td>1a</td>
<td>02/07</td>
<td>1.10</td>
<td>Black</td>
<td>1080p S</td>
<td>north</td>
<td>30</td>
<td>1080p</td>
<td>0.10 (±0.09)</td>
</tr>
<tr>
<td>1b</td>
<td>02/07</td>
<td>0.77 (±0.33)</td>
<td>Light</td>
<td>1080p S</td>
<td>south</td>
<td>30</td>
<td>1080p</td>
<td>0.10 (±0.09)</td>
</tr>
<tr>
<td>2a</td>
<td>10/09</td>
<td>0.74 (±0.25)</td>
<td>Black</td>
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<td>north</td>
<td>30</td>
<td>1080p</td>
<td>0.17 (±0.11)</td>
</tr>
<tr>
<td>2b</td>
<td>10/09</td>
<td>0.74 (±0.25)</td>
<td>Light</td>
<td>1080p S</td>
<td>south</td>
<td>30</td>
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<td>0.10 (±0.09)</td>
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<td>0.10 (±0.09)</td>
</tr>
<tr>
<td>3b</td>
<td>10/09</td>
<td>0.74 (±0.25)</td>
<td>Light</td>
<td>1080p S</td>
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<td>1080p</td>
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<td>1080p</td>
<td>0.17 (±0.11)</td>
</tr>
</tbody>
</table>

OBJECTIVES OF THE STUDY

- Develop an appropriate methodology for assessing the seabed impact of bottom gillnets
- Assess the movement of the leadline of gillnet during soaking in 3-dimensions (x, y and z)

REFERENCES


FINANCIAL SUPPORT

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DTU Aqua National Institute of Aquatic Resources

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Good