

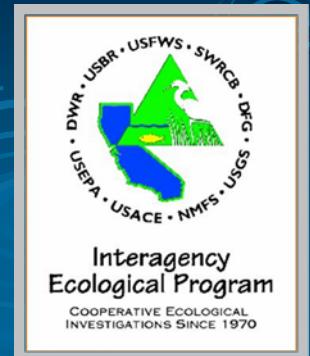
Behind The Science: The Underwater Story Of The Midwater Trawl

Dave Contreras, Jennifer Messineo, Steven
Slater, and Randy Baxter


California Department of Fish and Game



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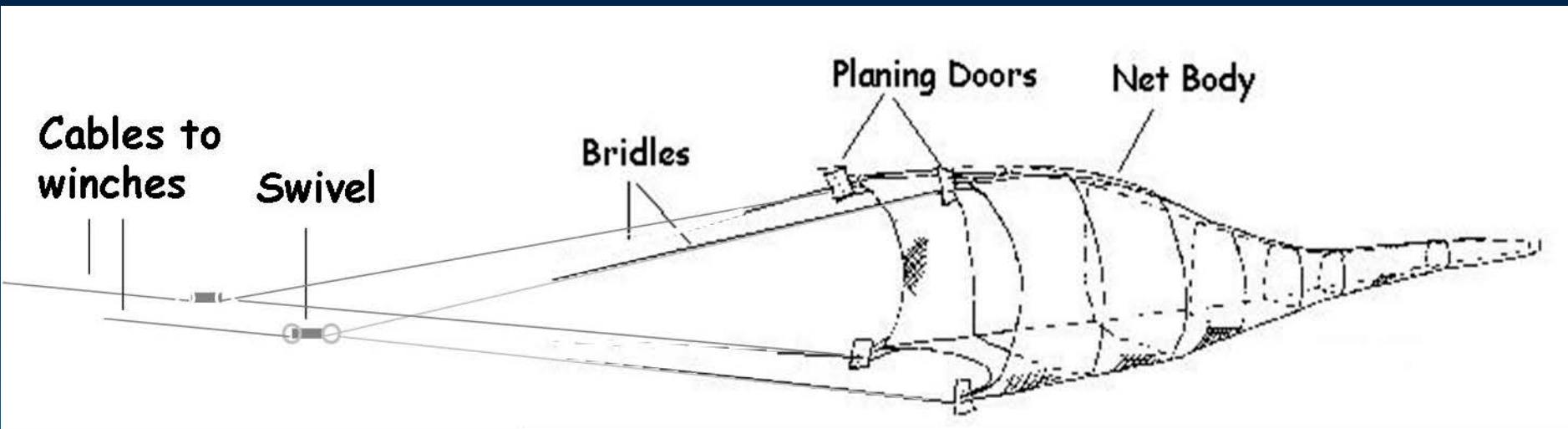


Overview

- Fall Midwater Trawl (FMWT) survey background
 - Project goals
 - Net Track system
 - Results
 - The big picture
- 

FMWT Survey

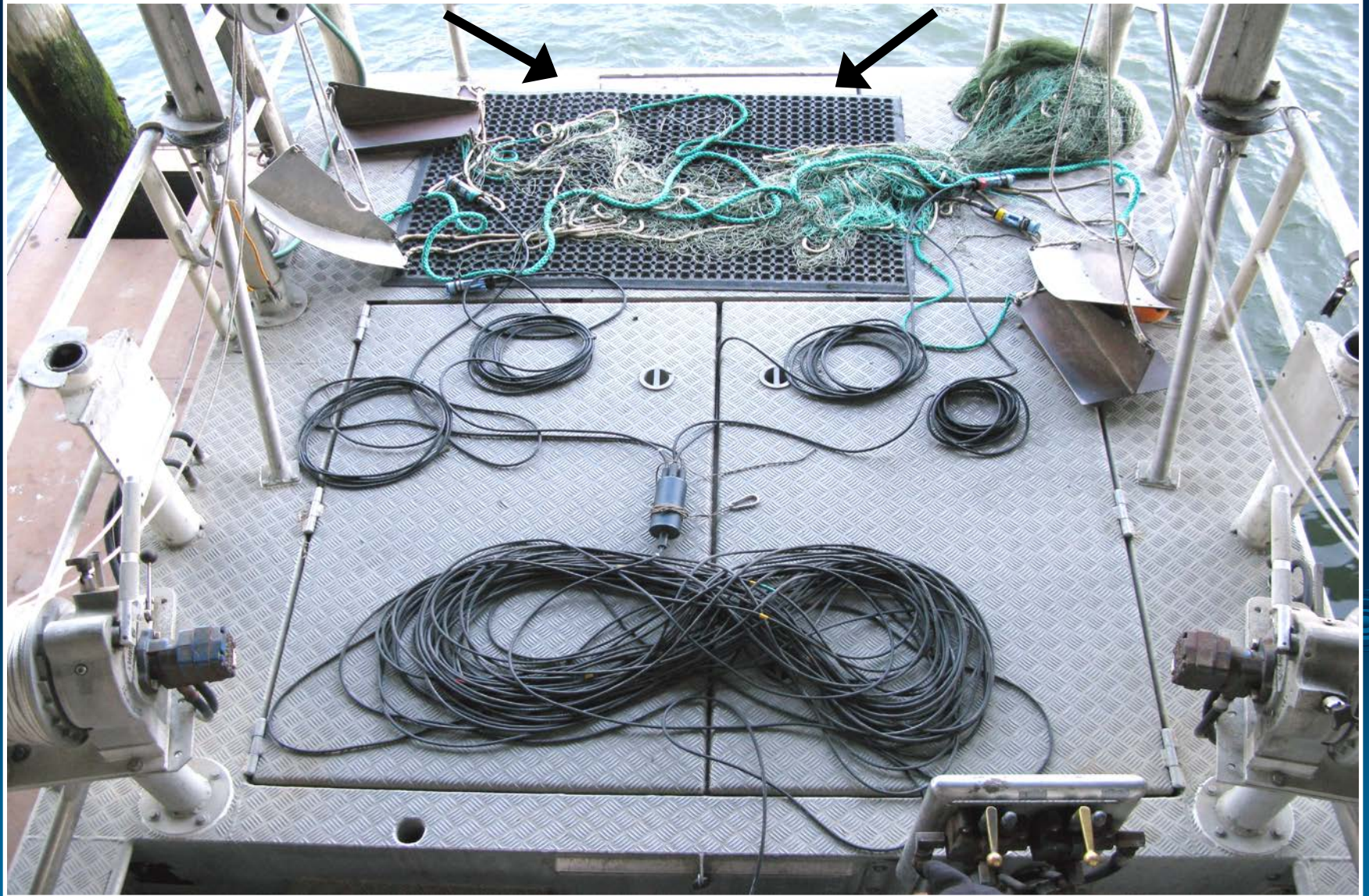
- Tows a midwater trawl net (MWT)
- 12 minute, oblique tows
- Deployment length based on water depth



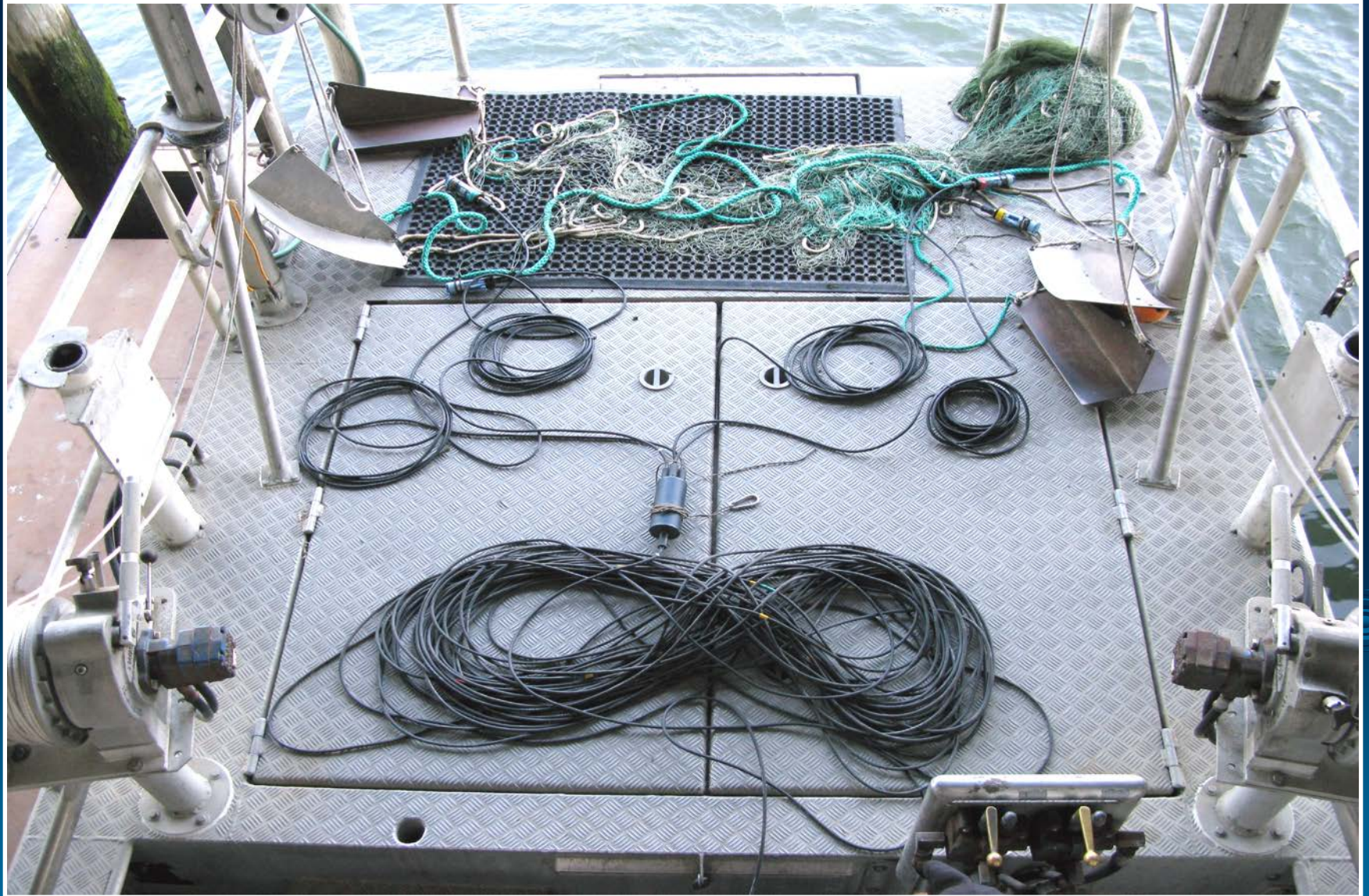
Project Goals

1. Determine net mouth area during tow
2. Compare to previous estimate
3. Differences among vessels
4. Location in water column

Net Track System



Net Track System



Net Track Responders

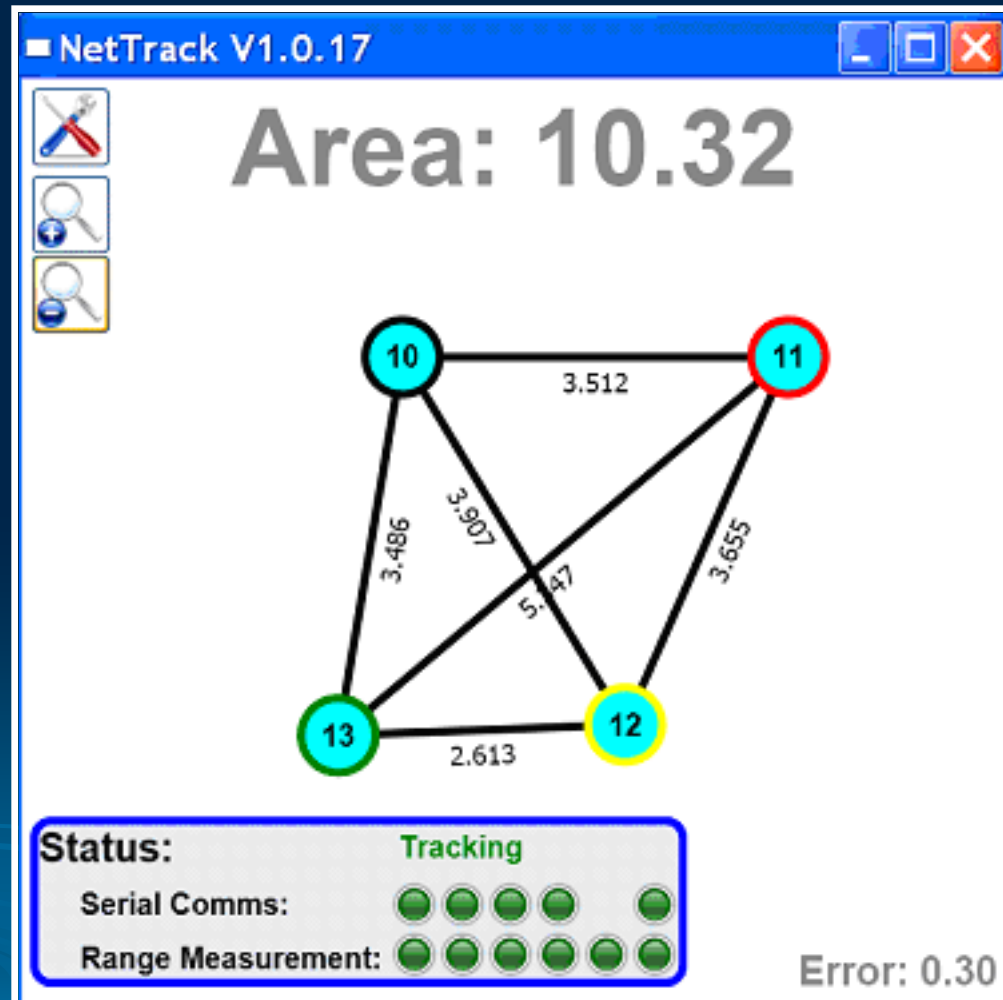


Net Track Responders



Net Track Software

- Range measurements and area calculation (meters and meters²)
- Real-time graphic of net mouth
- Refreshes every 4 seconds



How Does it Work?



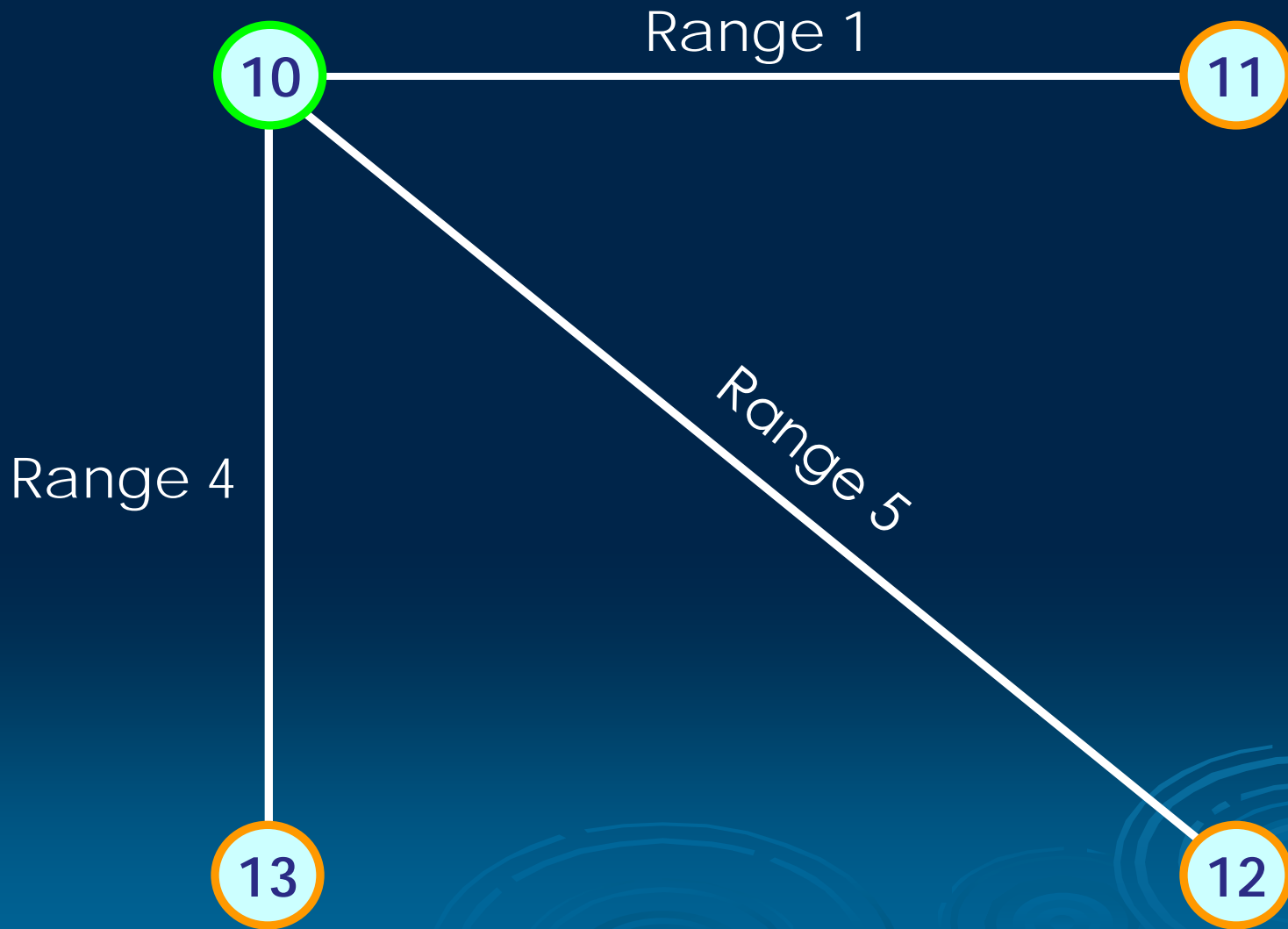
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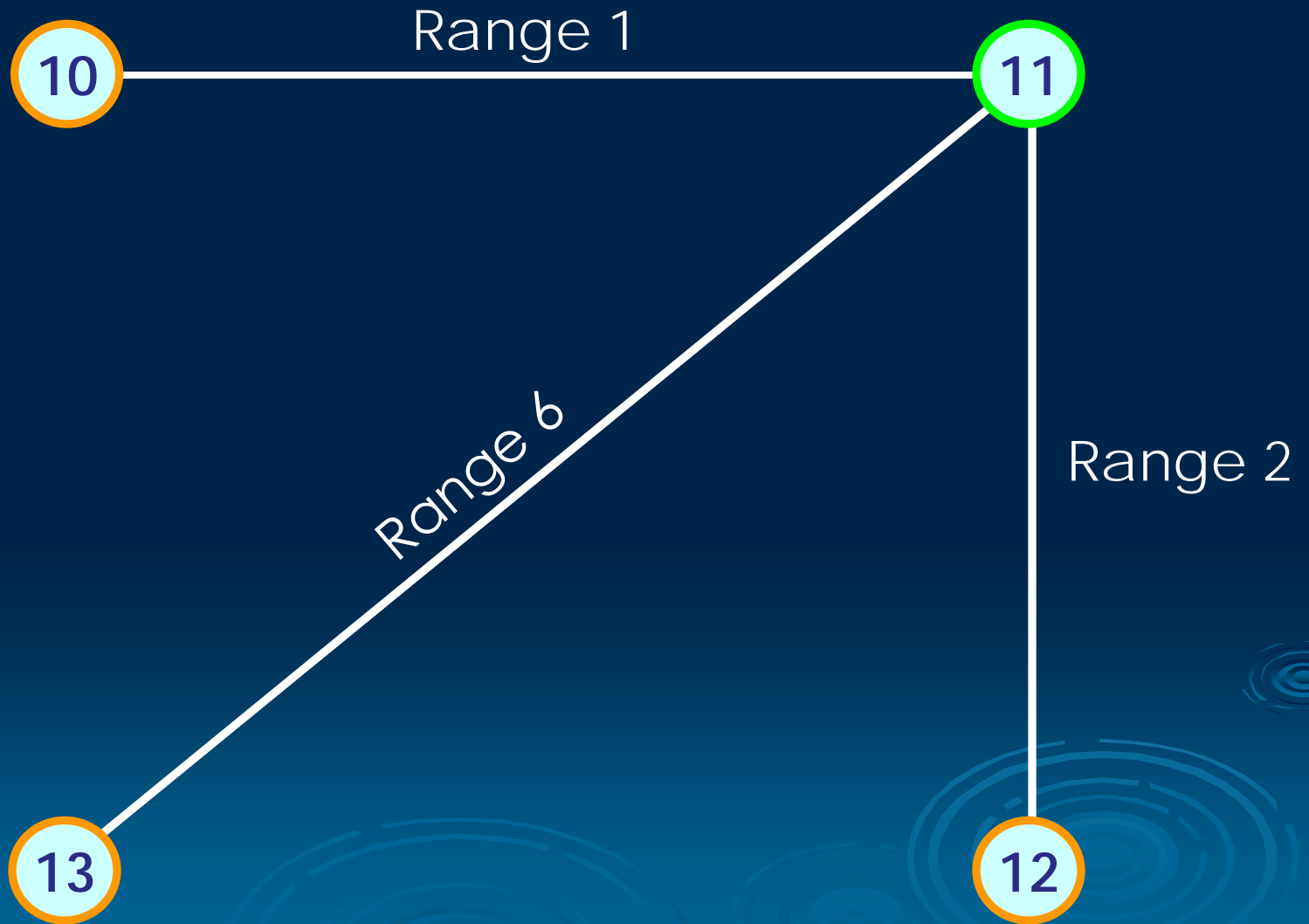
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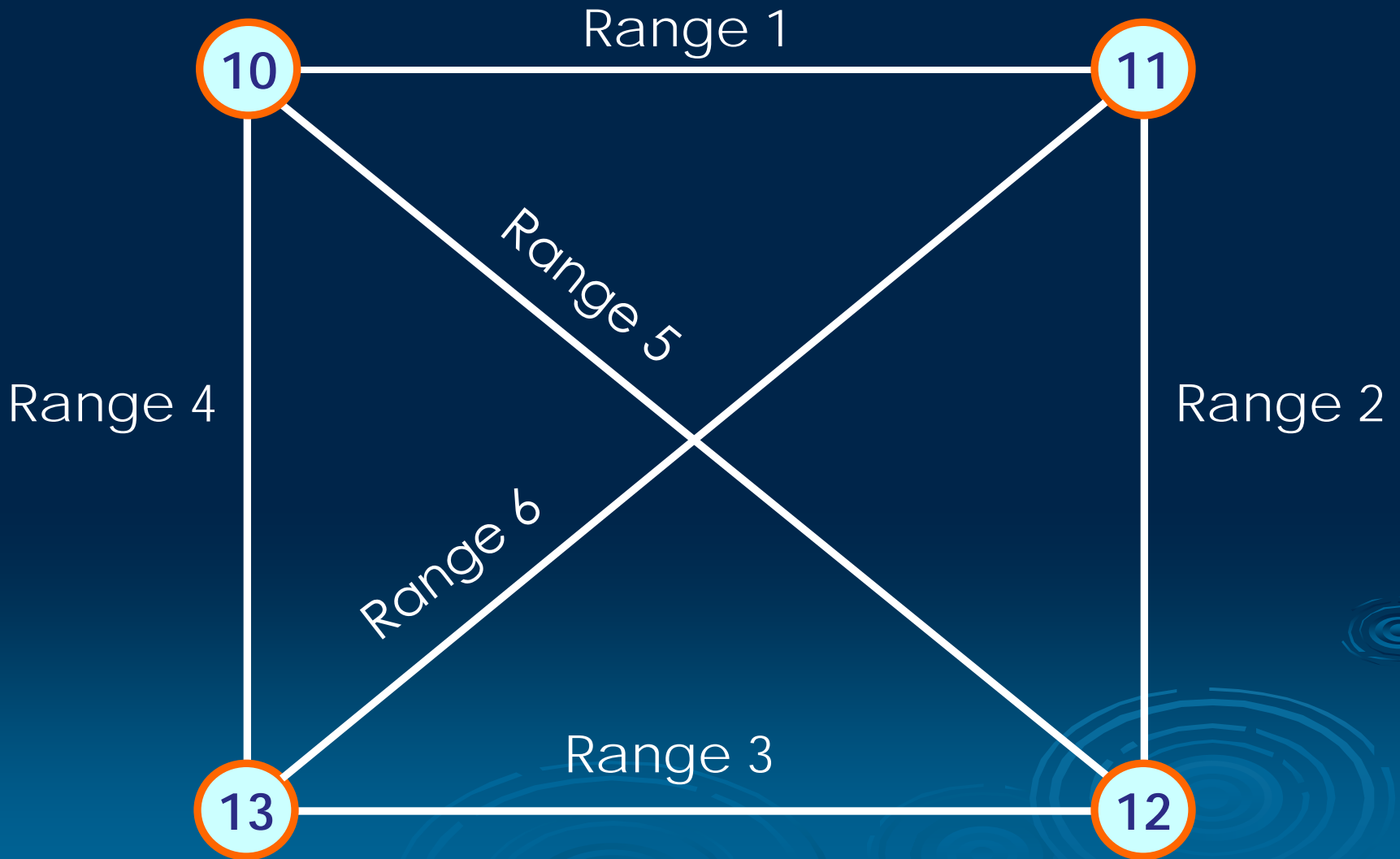




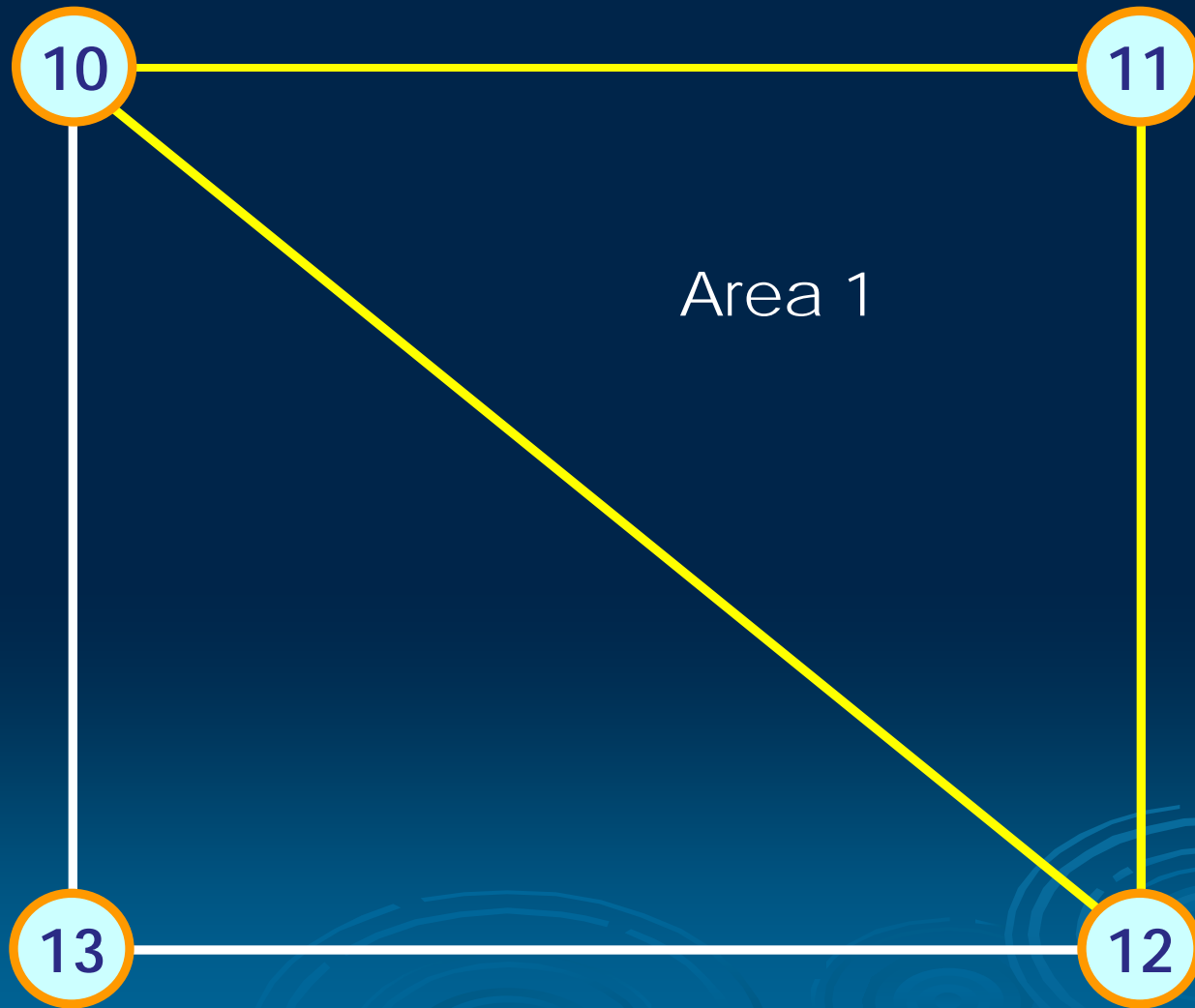




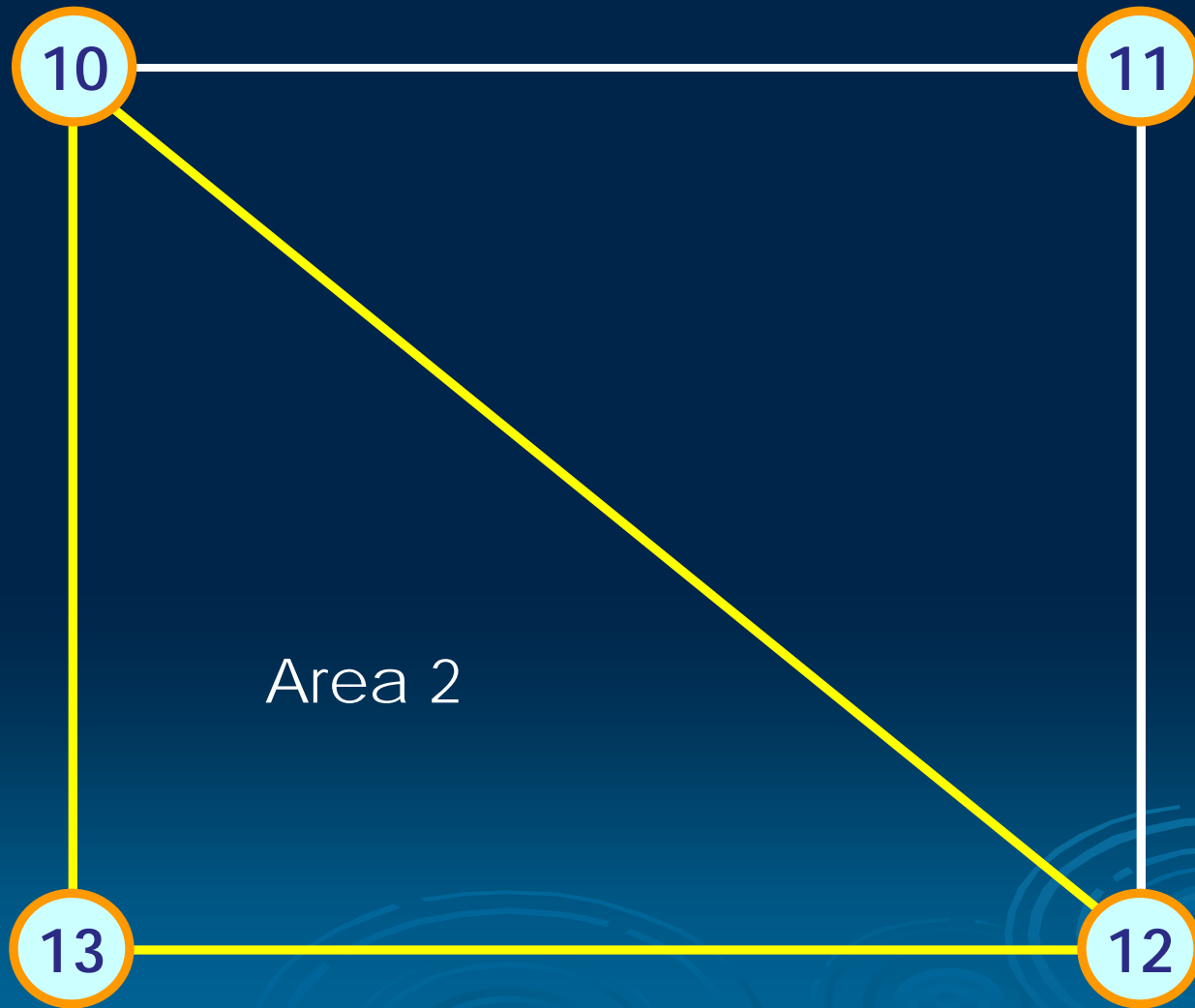
Range Measurements



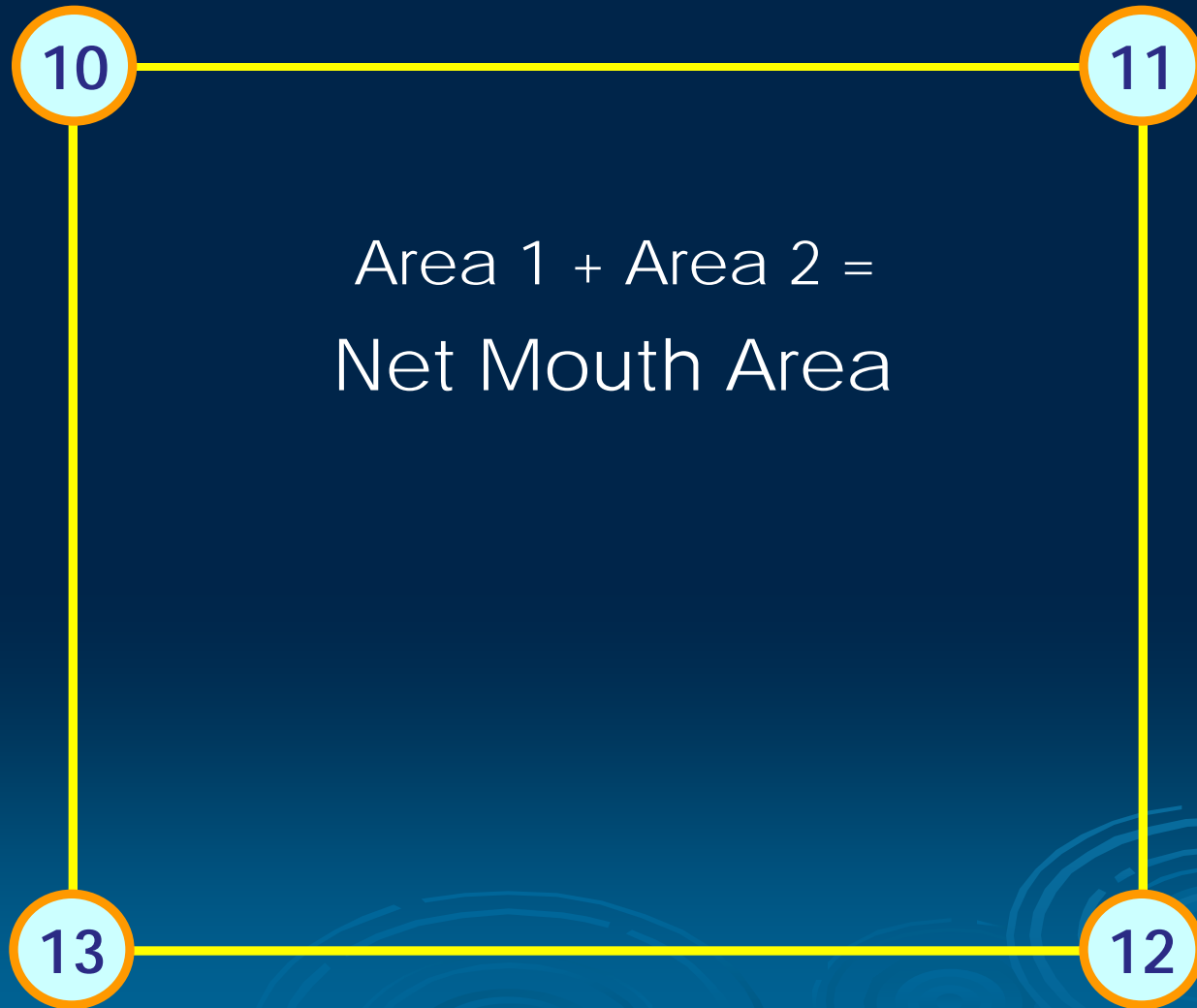
Range Measurements



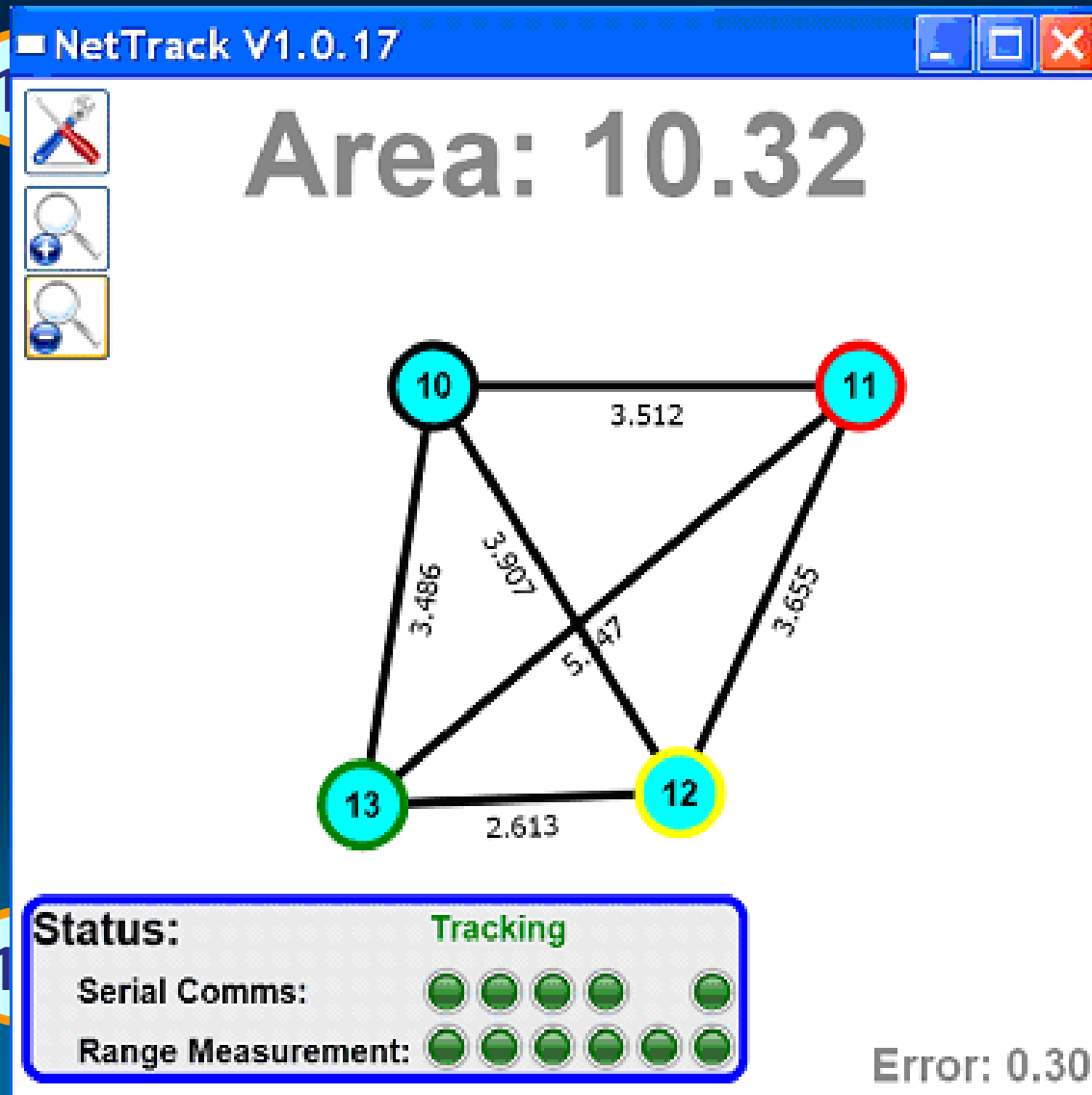
Range Measurements



Range Measurements



Range Measurements



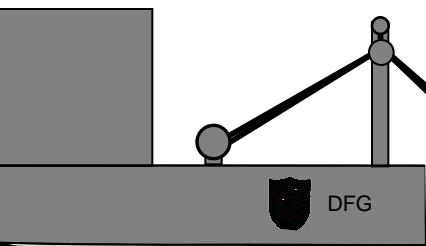
Field Sampling

- August and September, 2009
- Goal: 12 tows/vessel
- Similar weather & tidal conditions
- Upstream of Antioch Bridge, channel

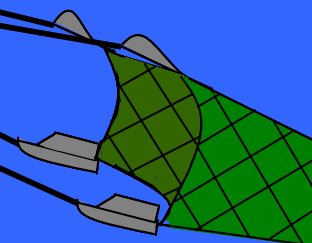
How Data Was Processed

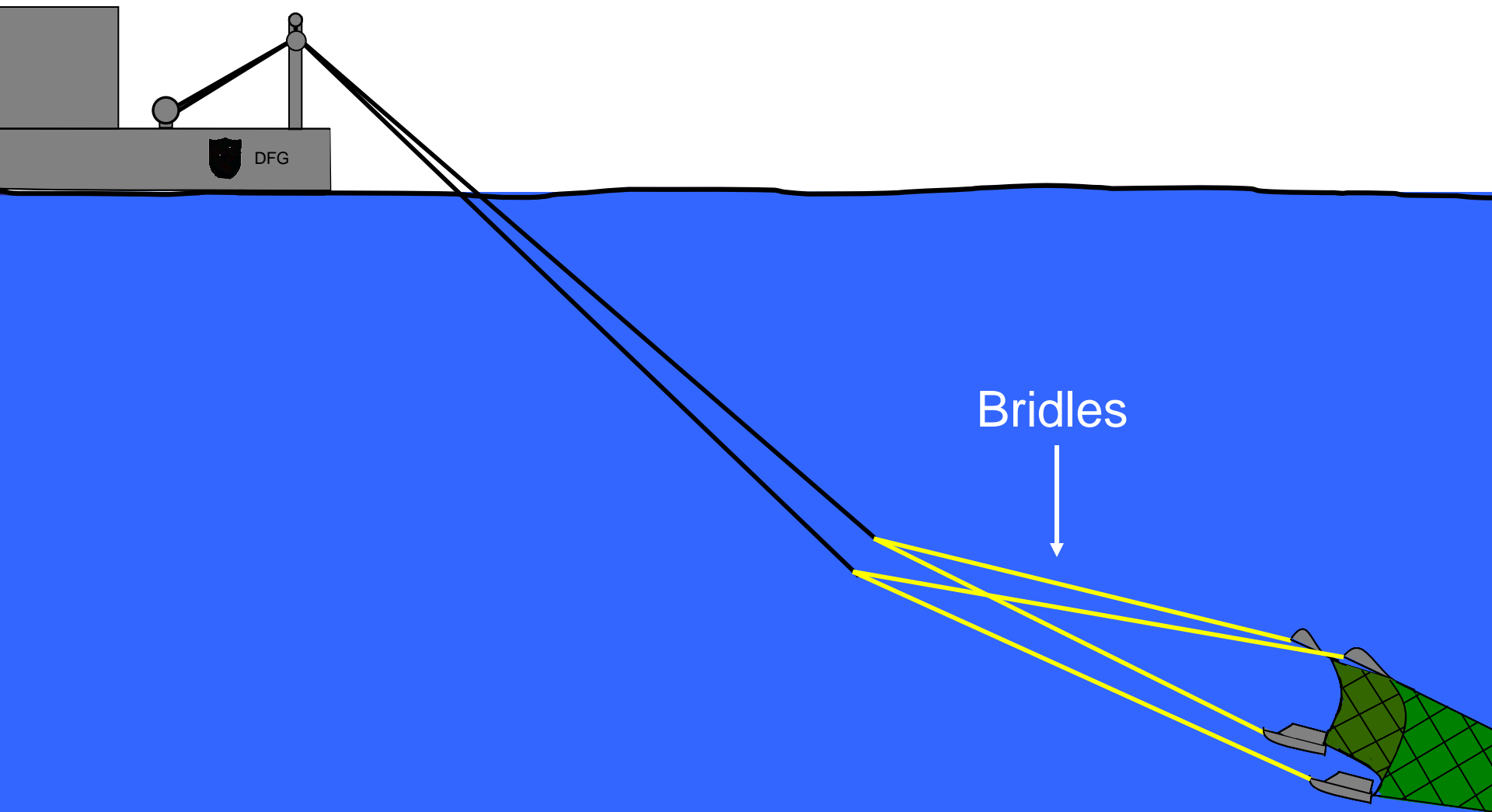
- Net mouth area
 - Averaged by minute
- Depth loggers
 - Averaged by minute





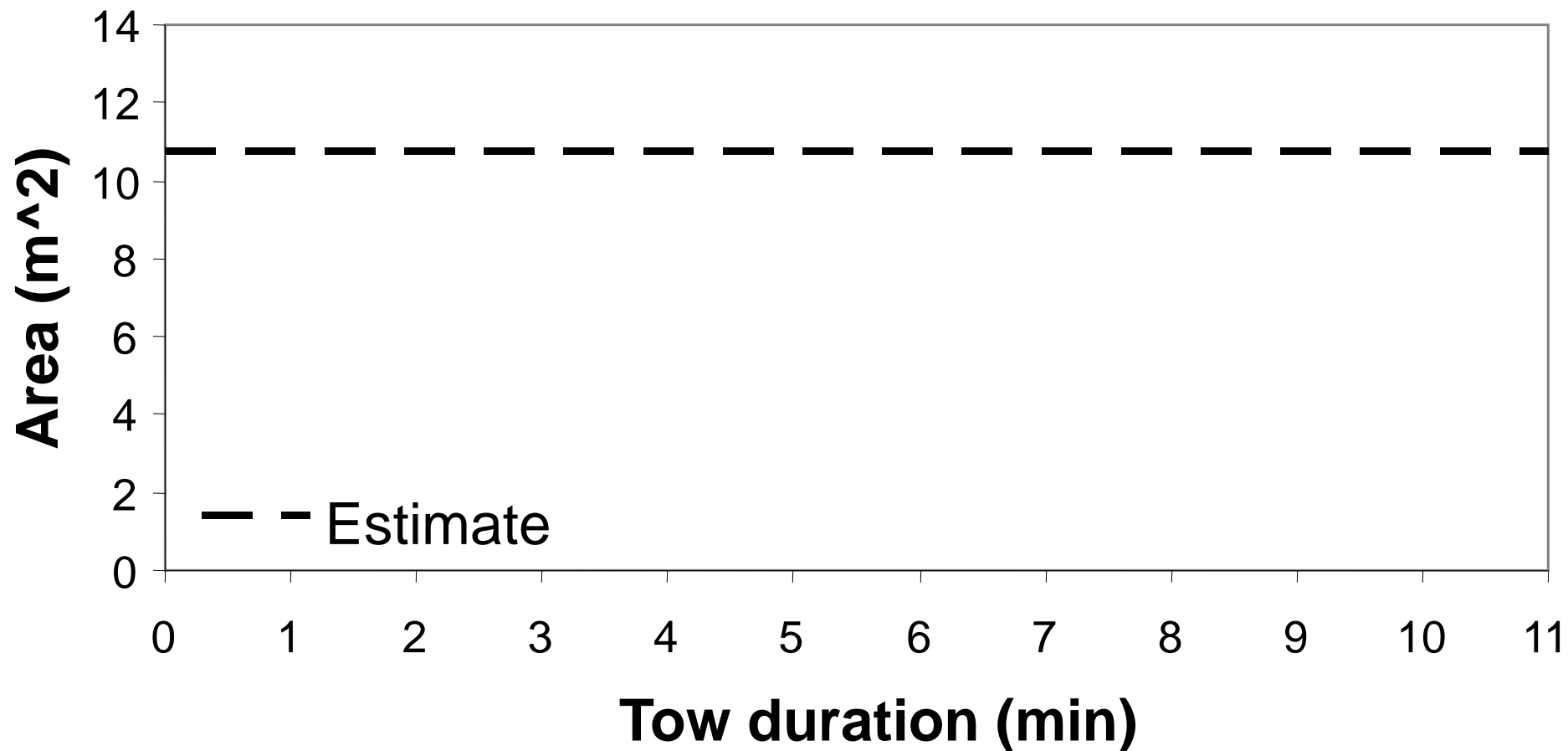
Full Deployment



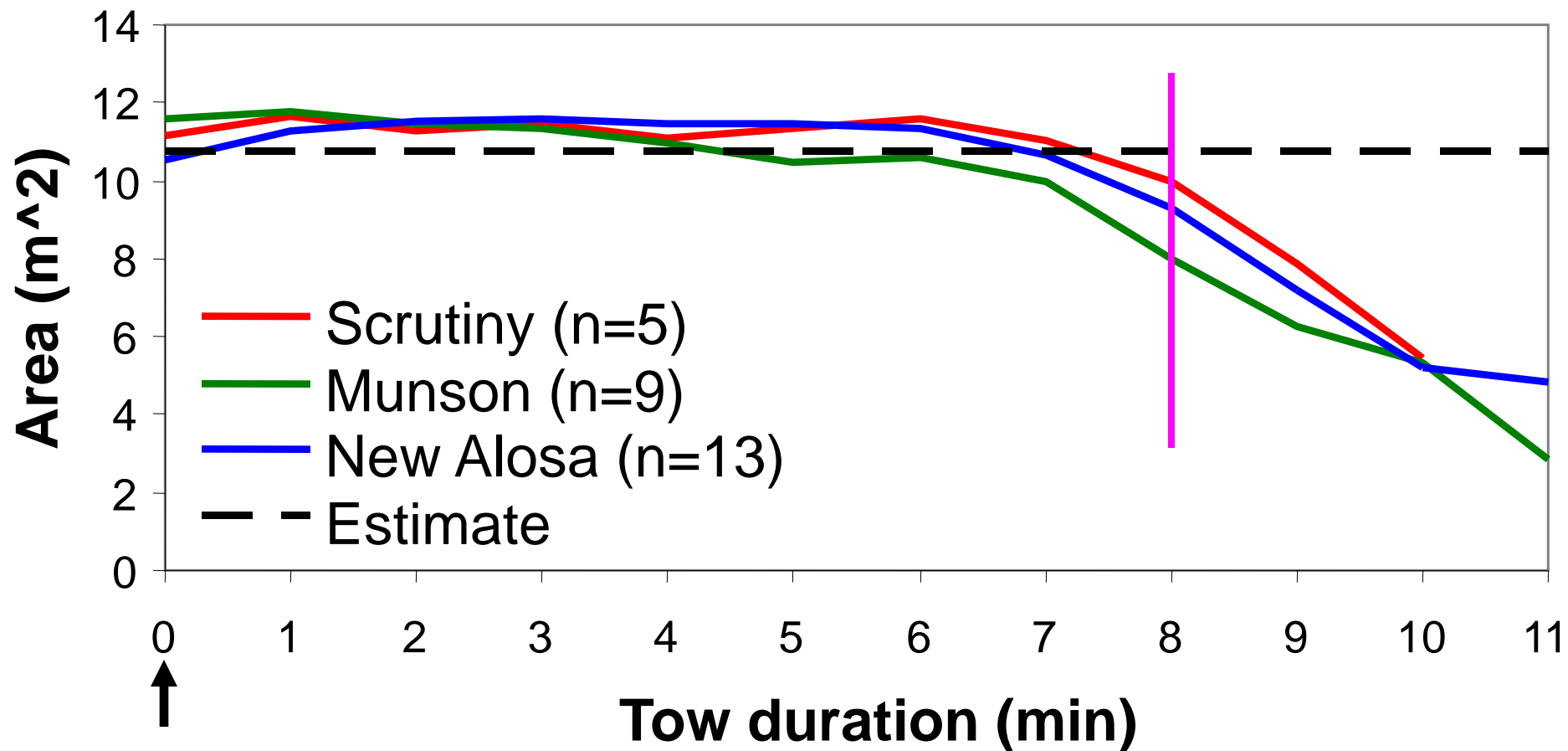


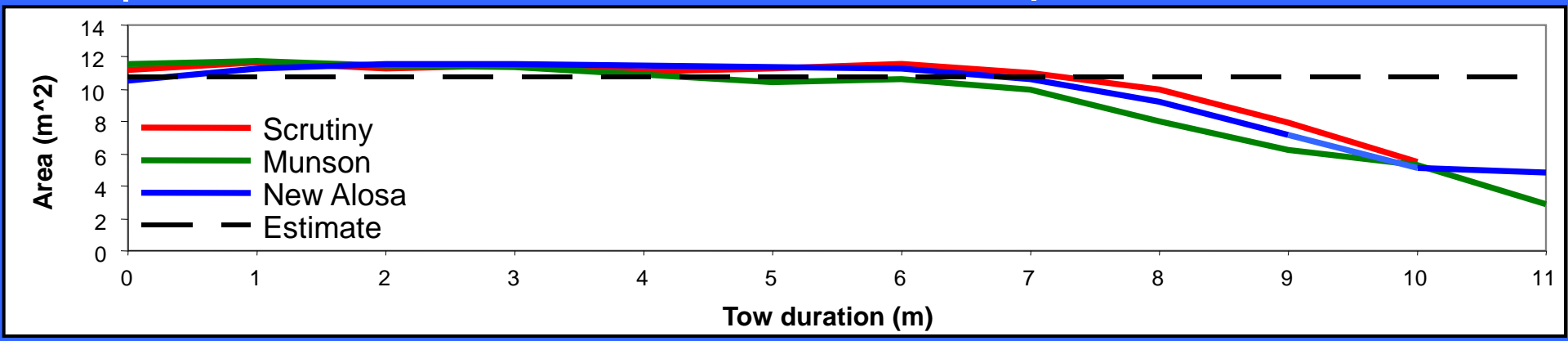
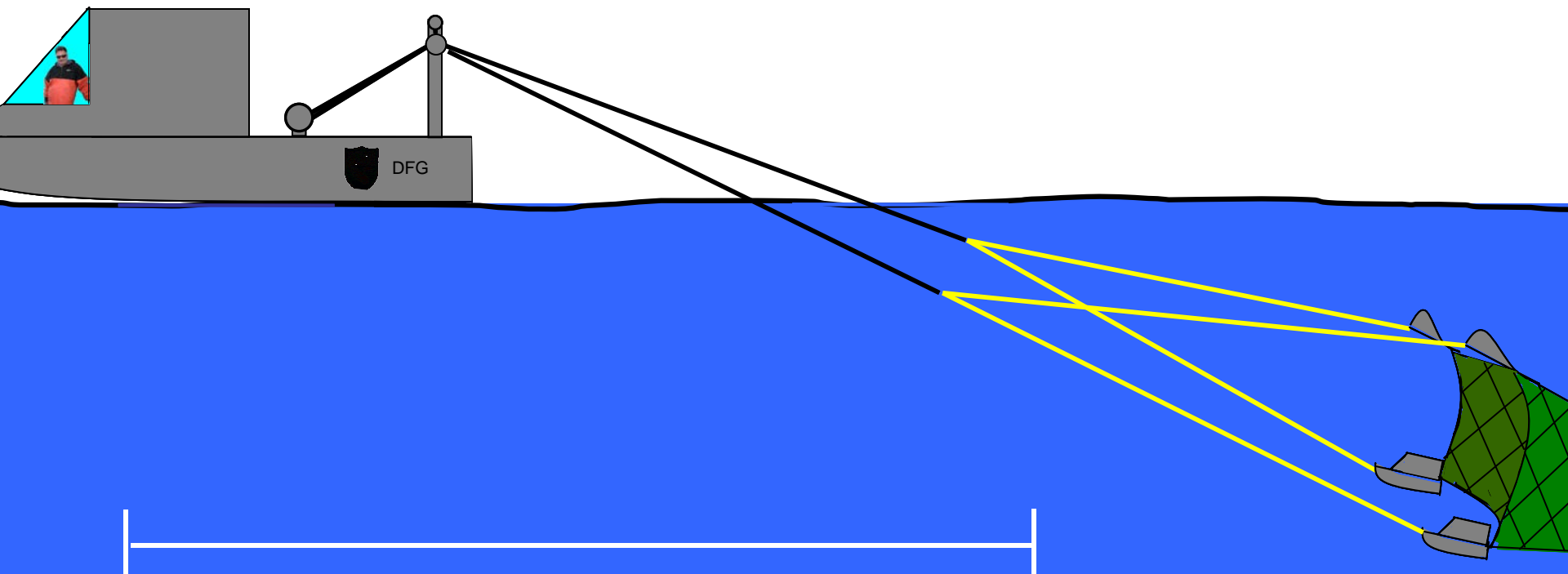
Bridles

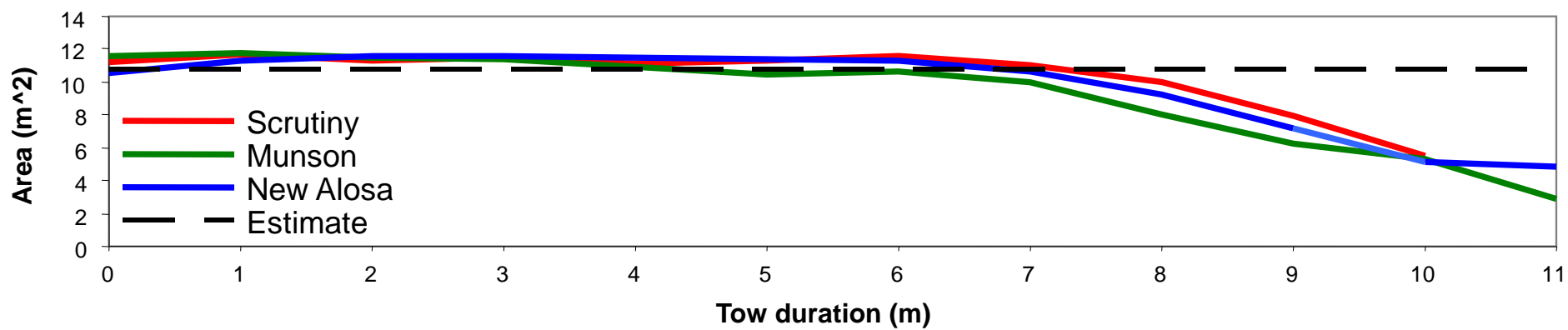
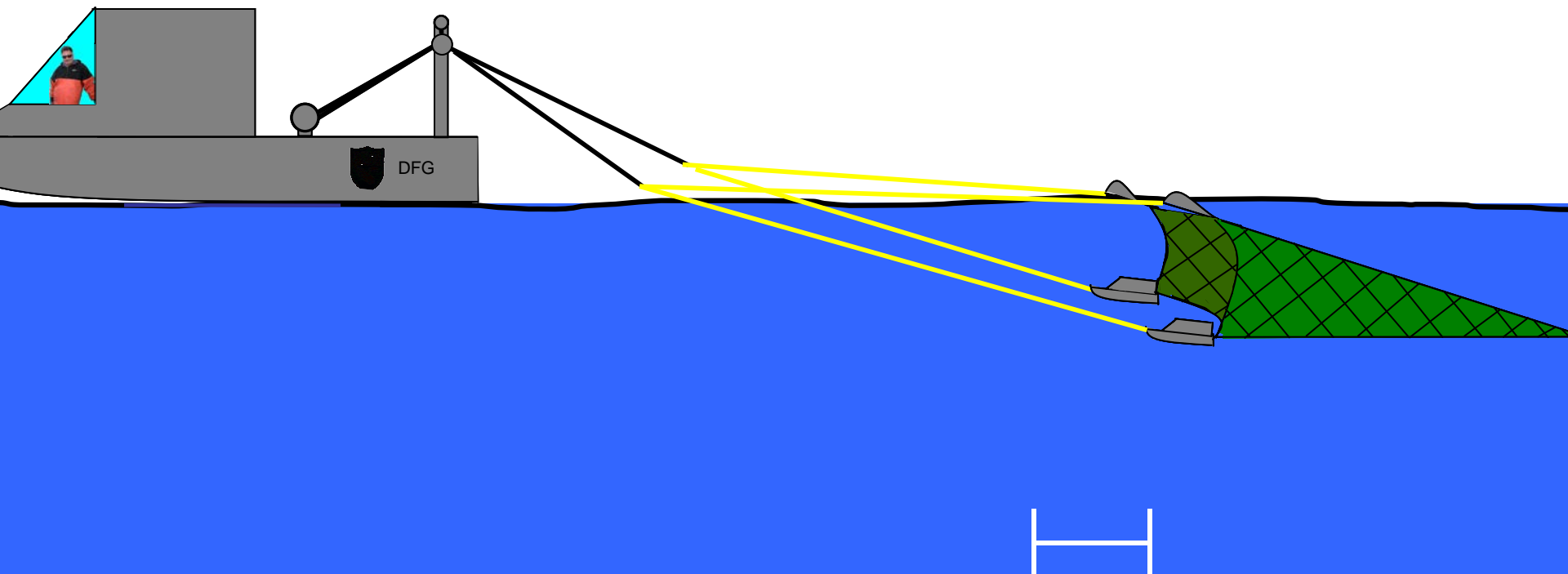
Average Net Mouth Area

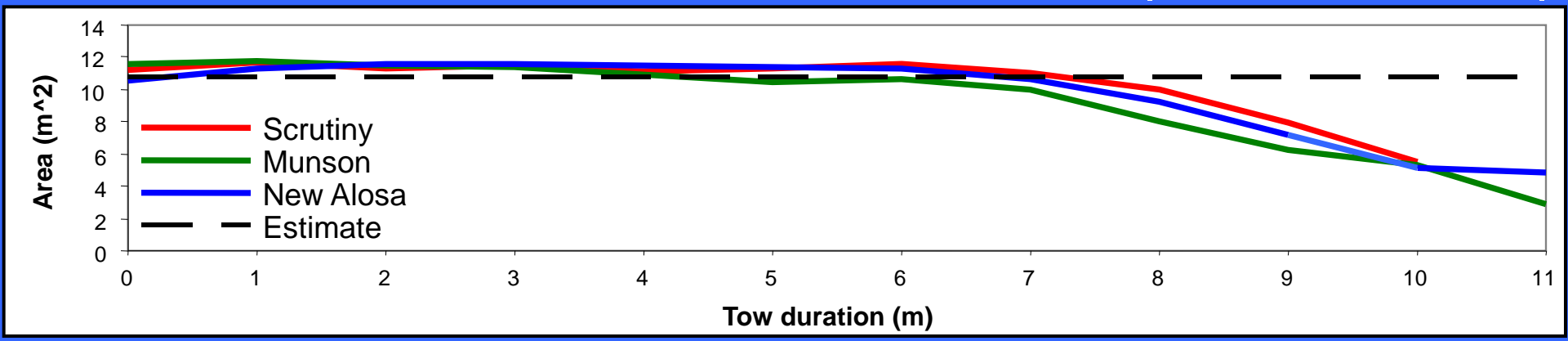
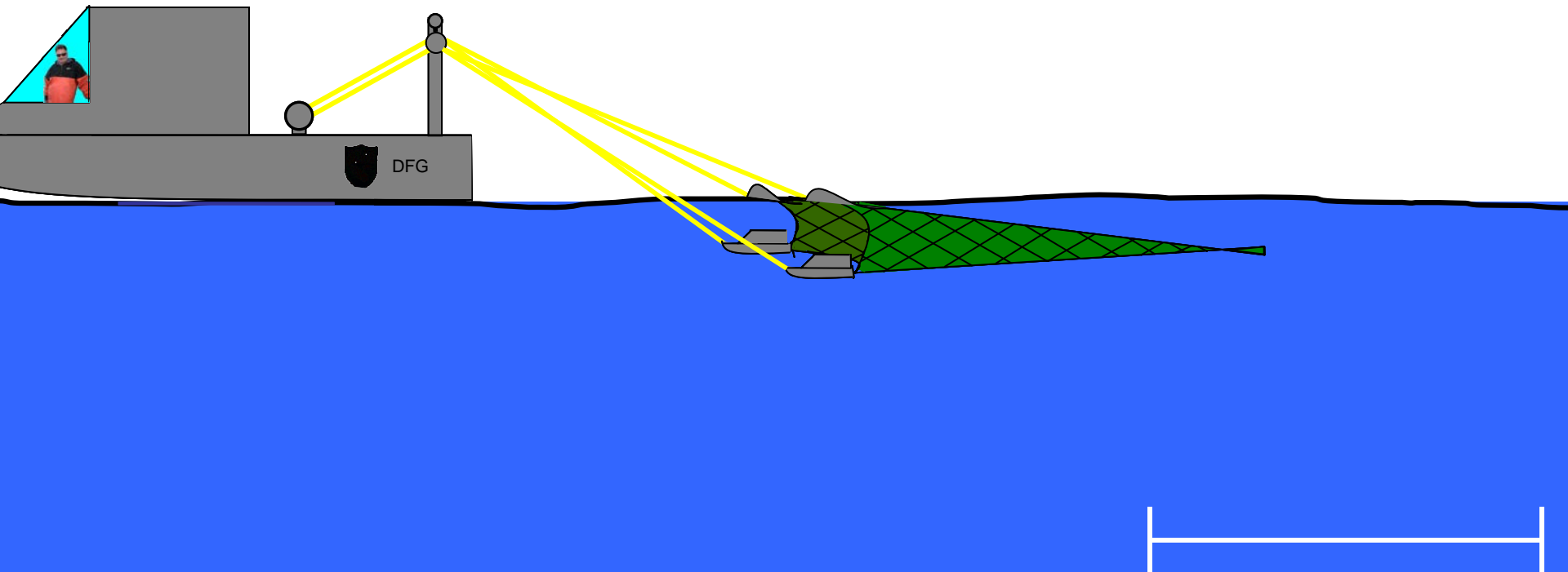


Average Net Mouth Area





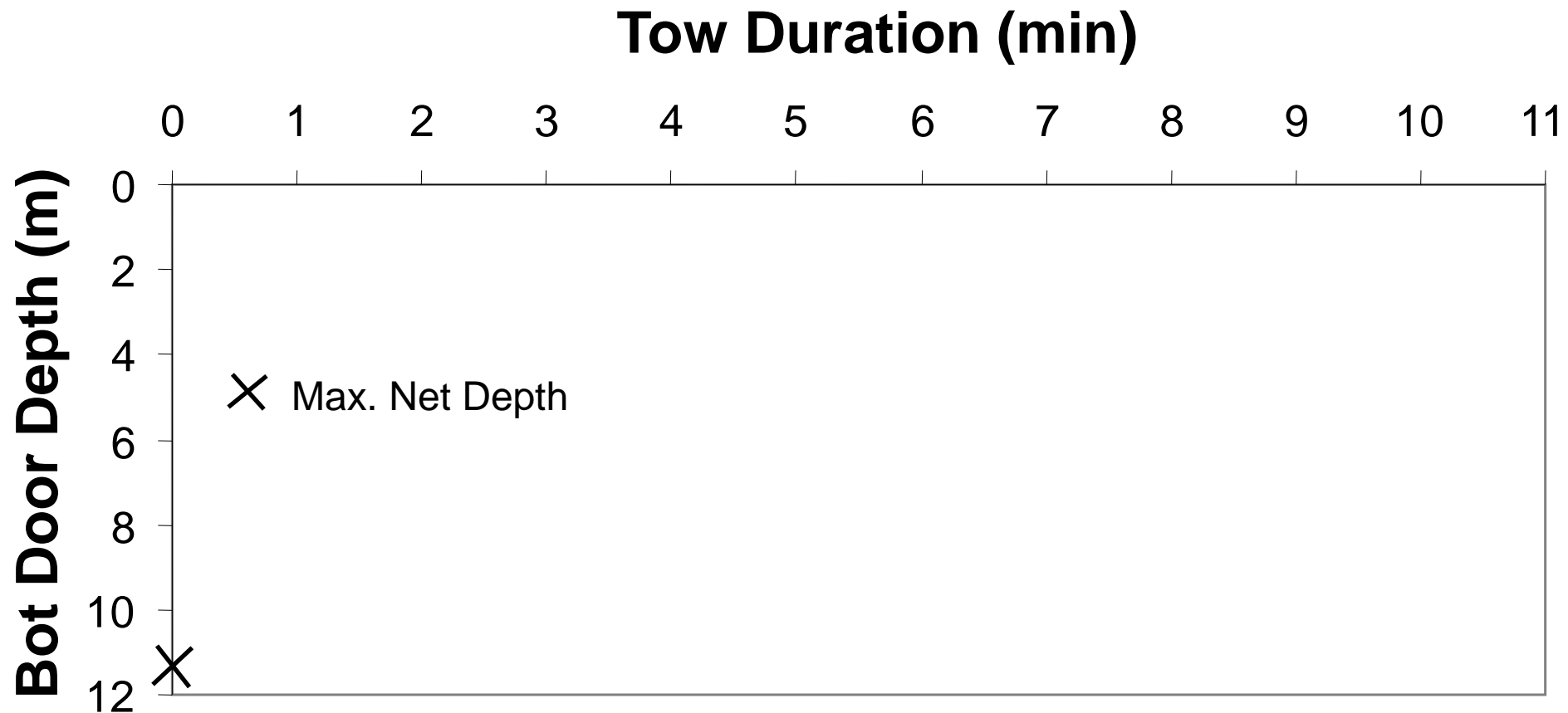




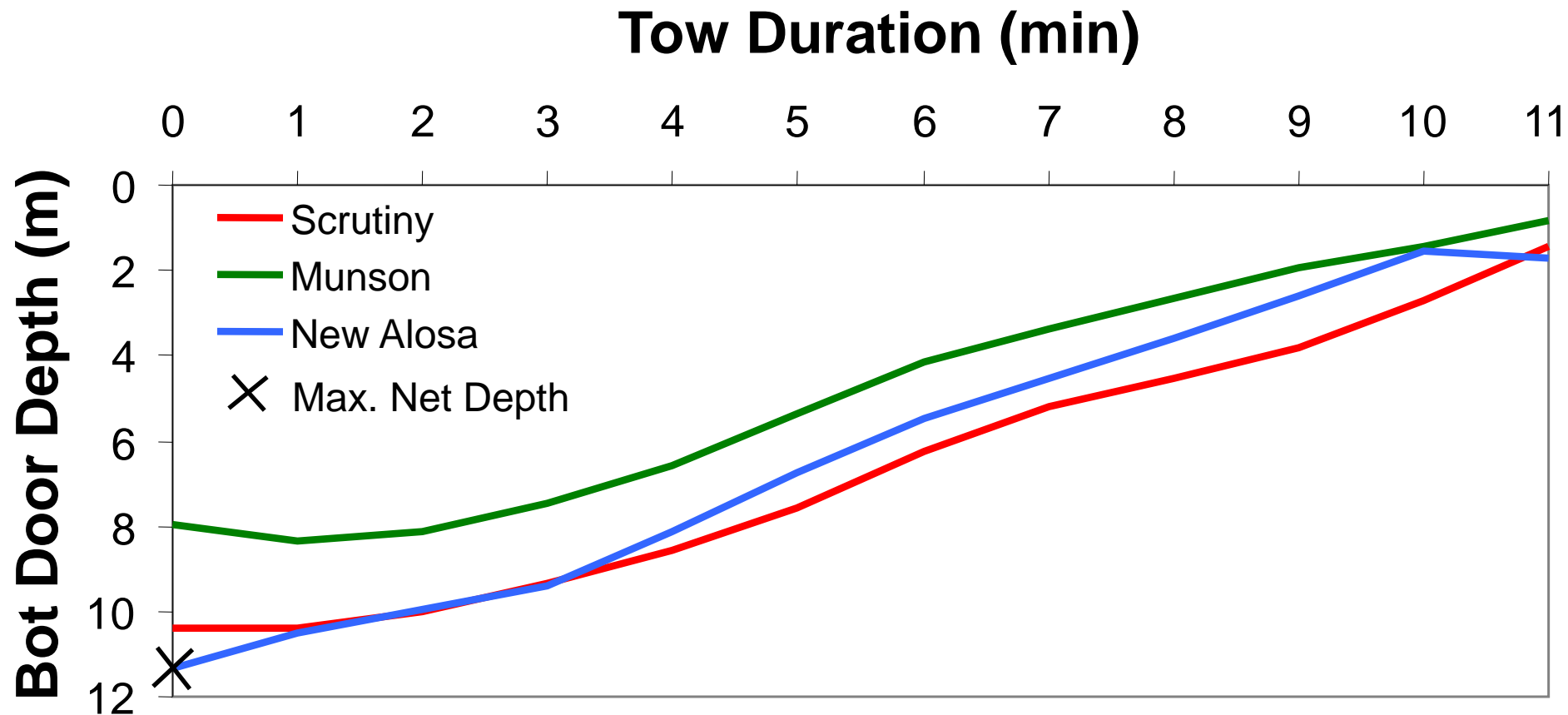
The Depth Logger



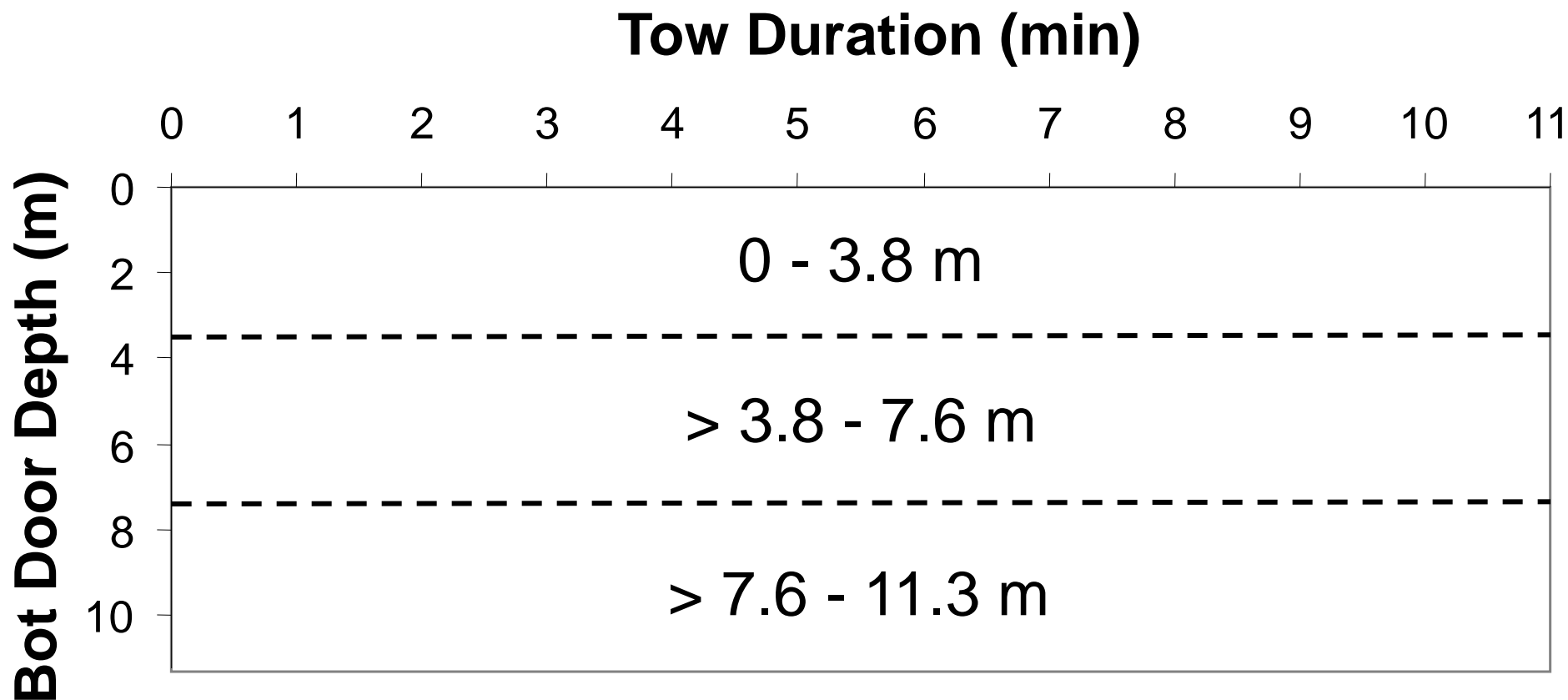
Gear Depth



Gear Depth




Water Strata Breakdown



Gear Depth Strata Time Durations

Depth Strata (m)	Scrutiny	Munson	New Alosa
0 - 3.8	40%	53%	43%
> 3.8 - 7.6	33%	43%	26%
> 7.6 - 11.3	27%	4%	31%

The Big Picture

- Mouth area comparable to estimate
 - Mouth area comparable among vessels
 - Net reached expected depth (Munson?)
 - What's next?
- 

A Big Thanks To...

- Erwin Van Nieuwenhuyse (USBR)
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- Desert Star Systems Inc.
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