

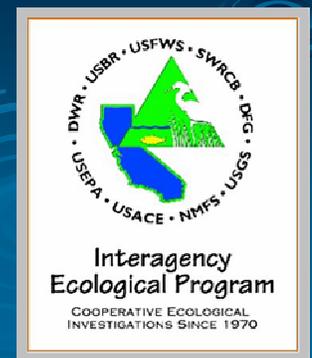
Behind The Science: The Underwater Story Of The Midwater Trawl

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

California Department of Fish and Game



IEP Conference
May 26, 2010

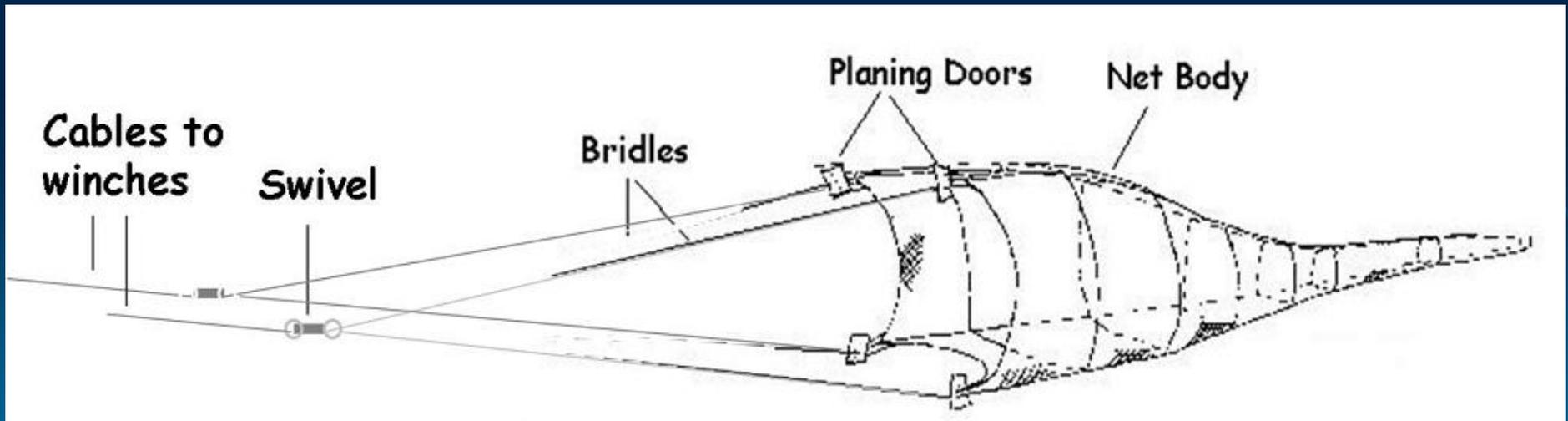


Overview

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

FMWT Survey

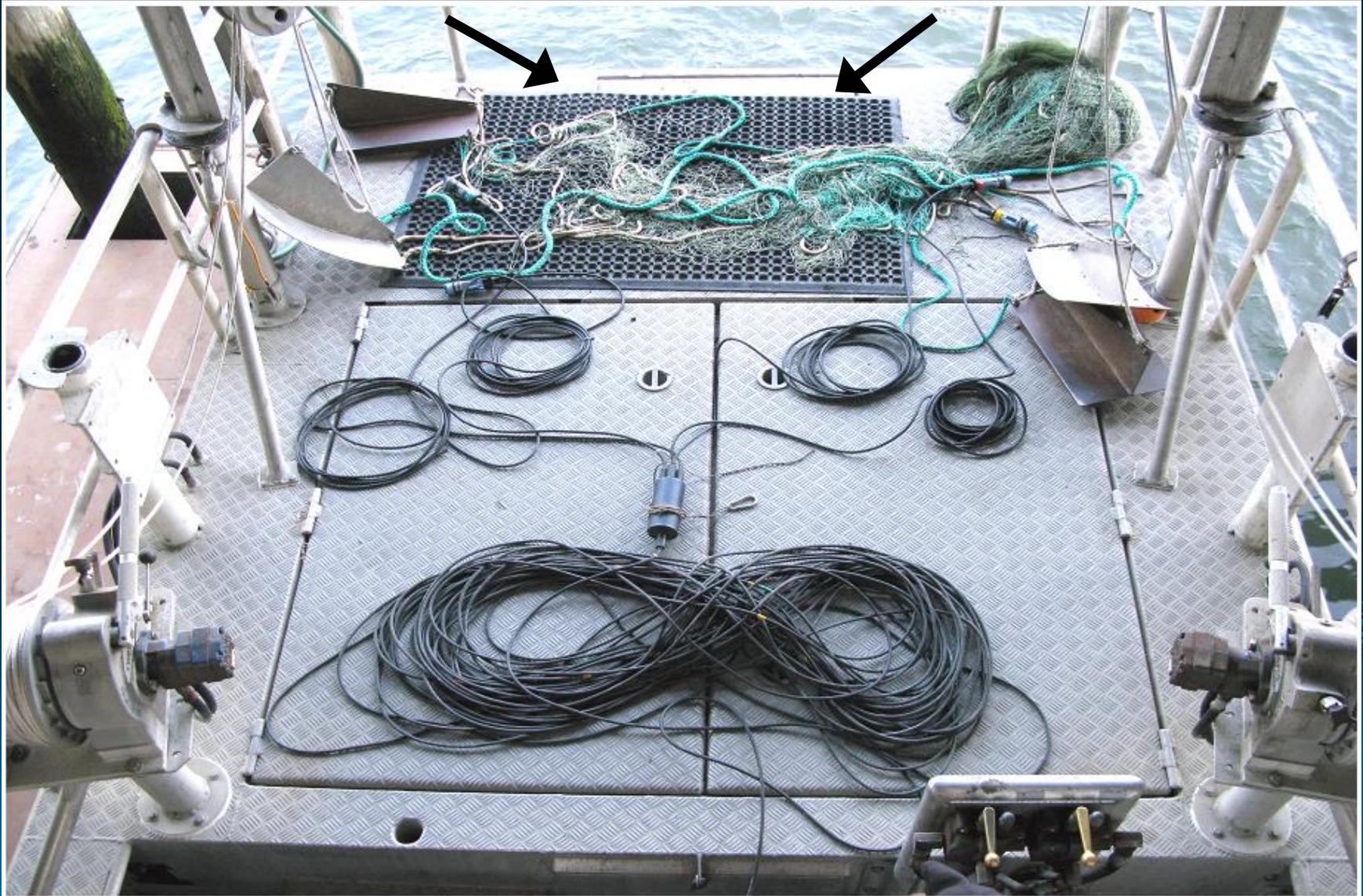
- Tows a midwater trawl net (MWT)
- 12 minute, oblique tows
- Deployment length based on water depth



Project Goals

1. Determine net mouth area during tow
 2. Compare to previous estimate
 3. Differences among vessels
 4. Location in water column
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- The bottom right corner of the slide features a decorative graphic of several concentric, light blue circles, resembling ripples on water, set against the dark blue background.

Net Track System



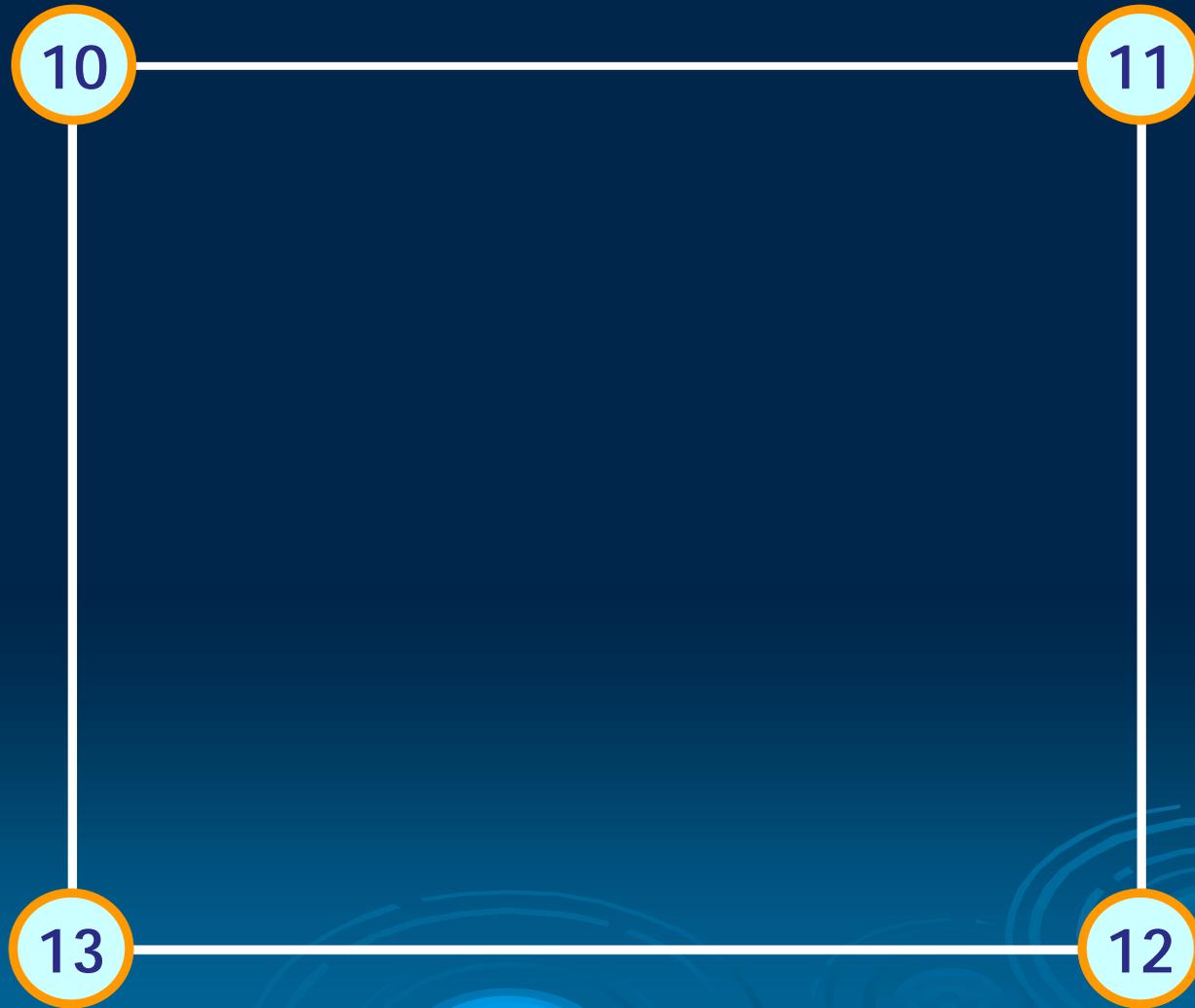
Net Track Responders



Net Track Responders



How Does it Work?



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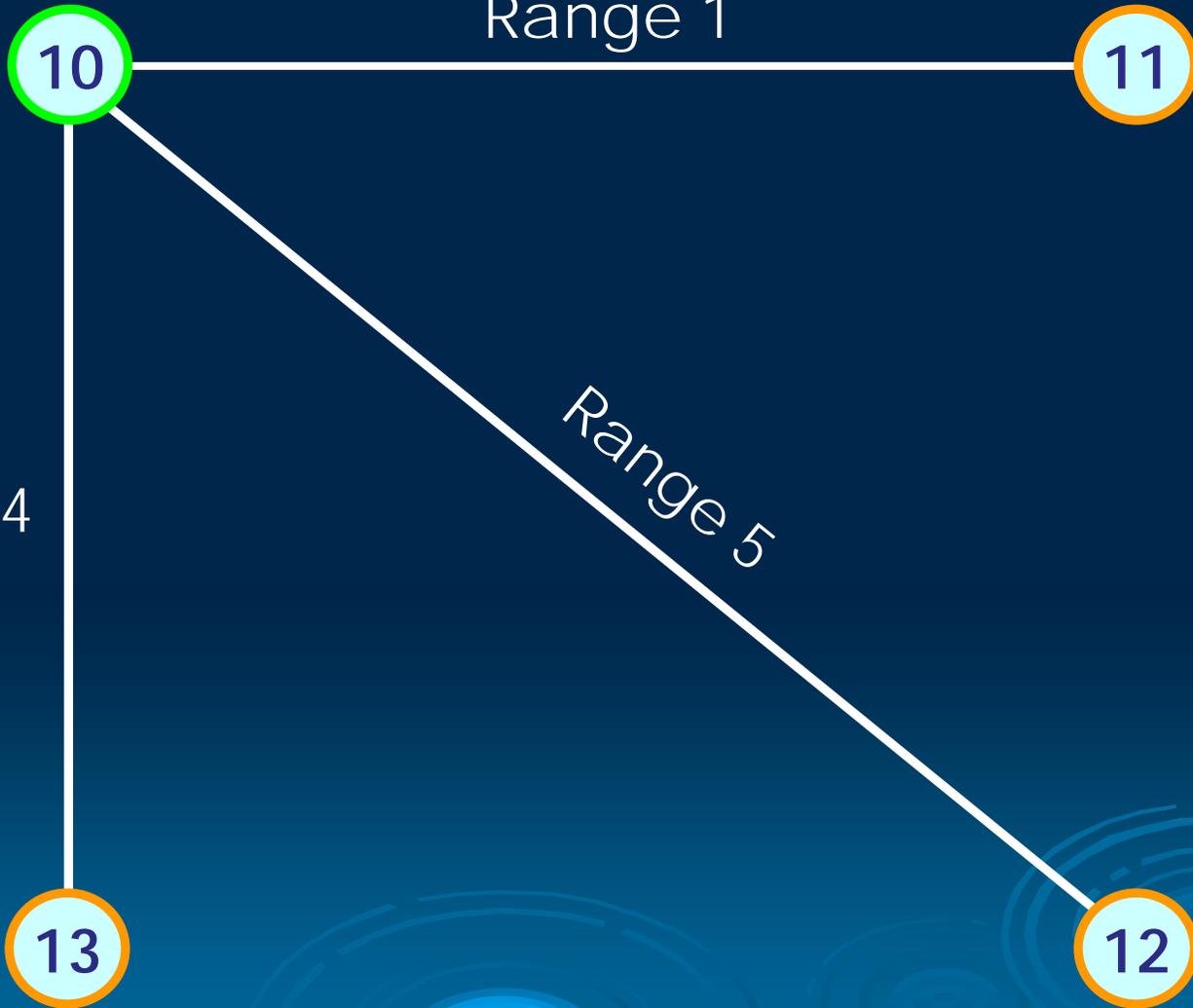
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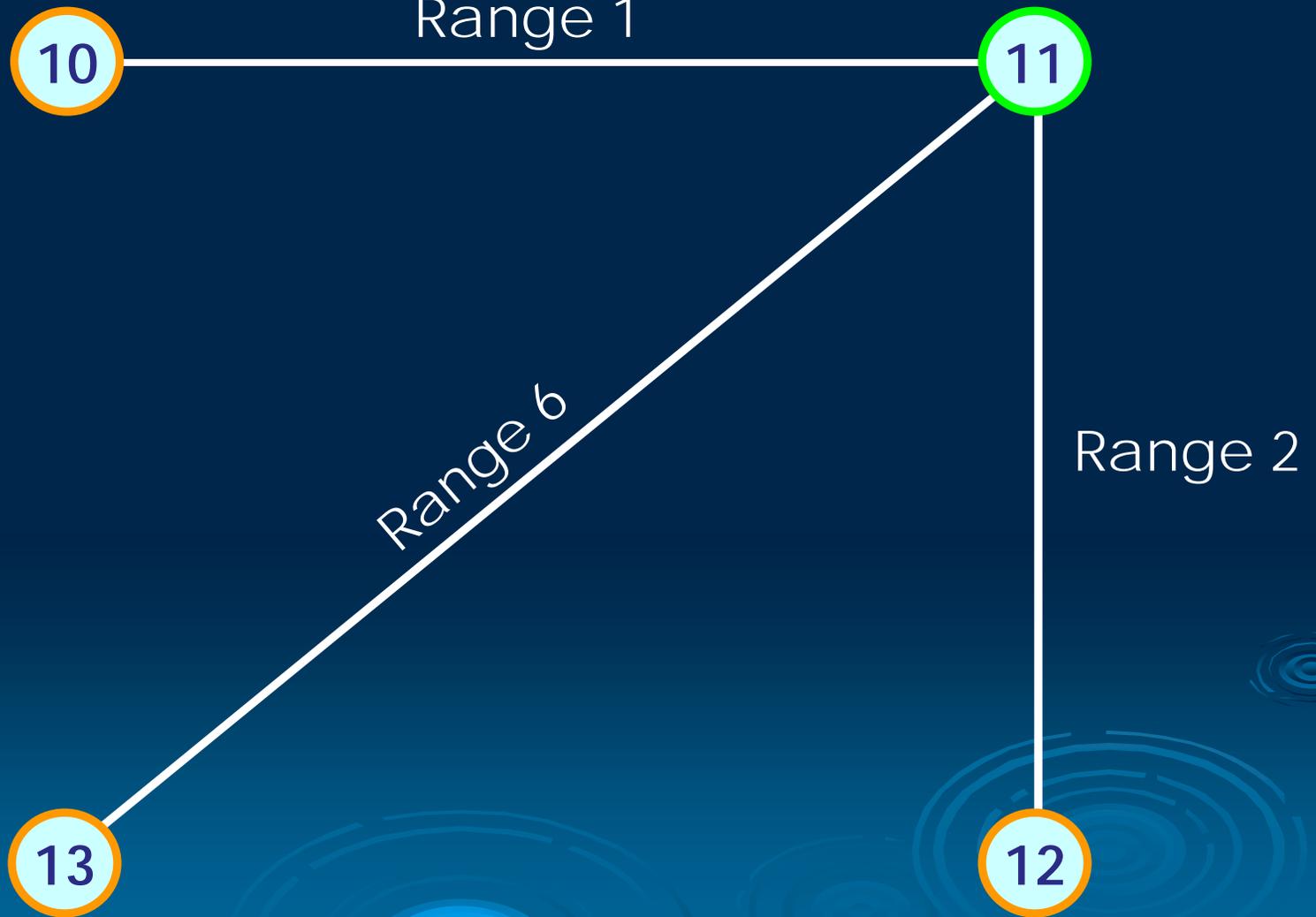
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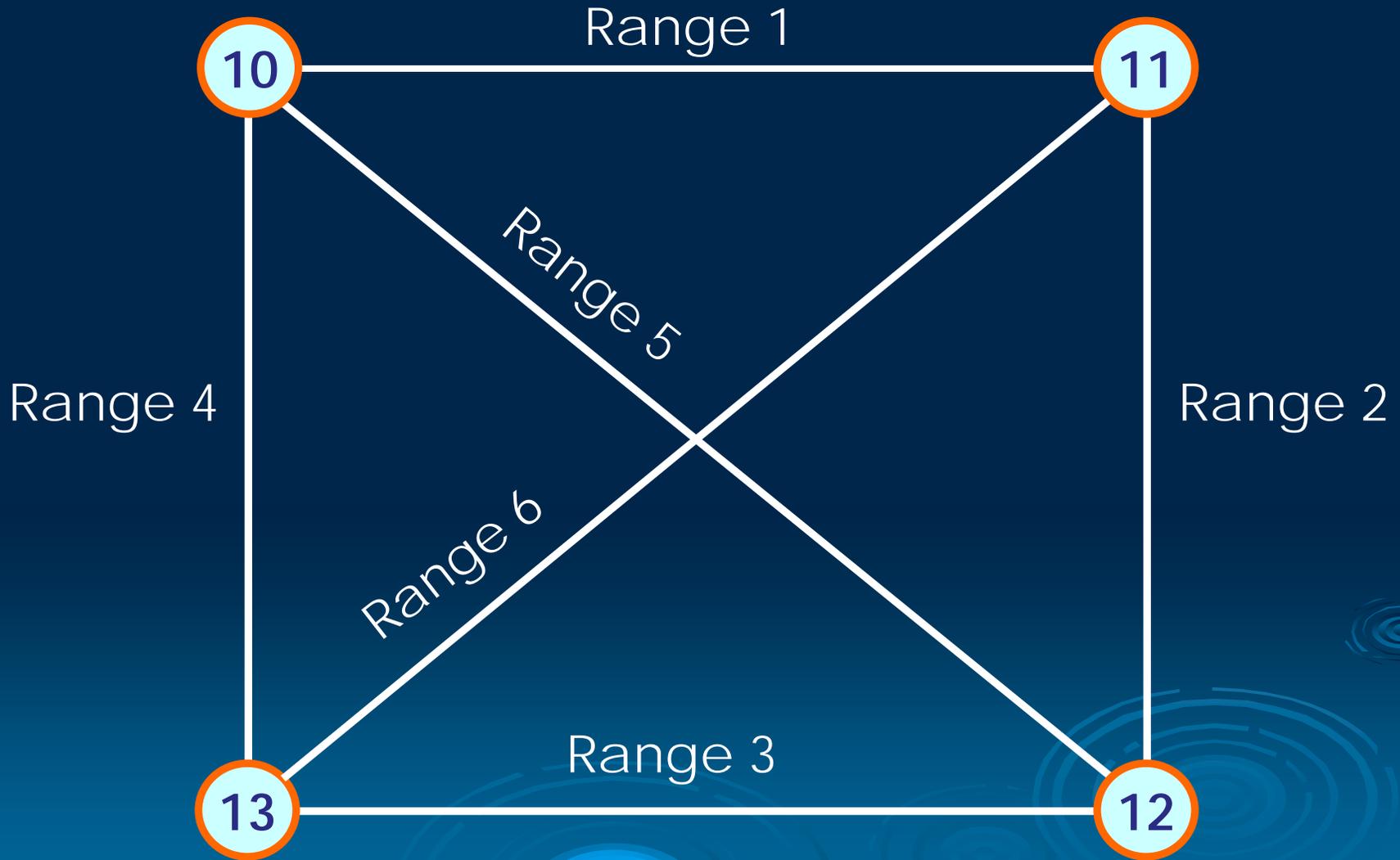
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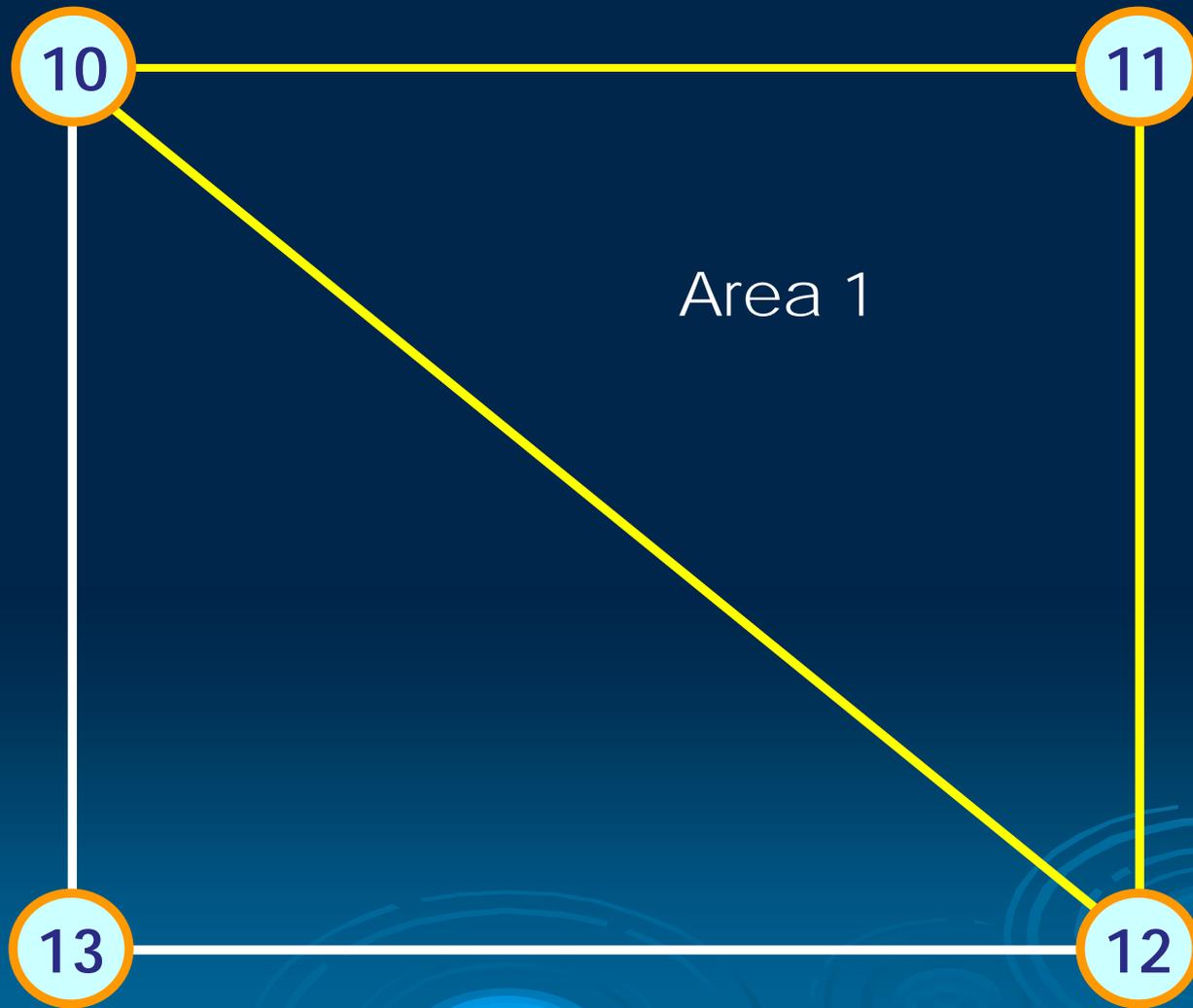




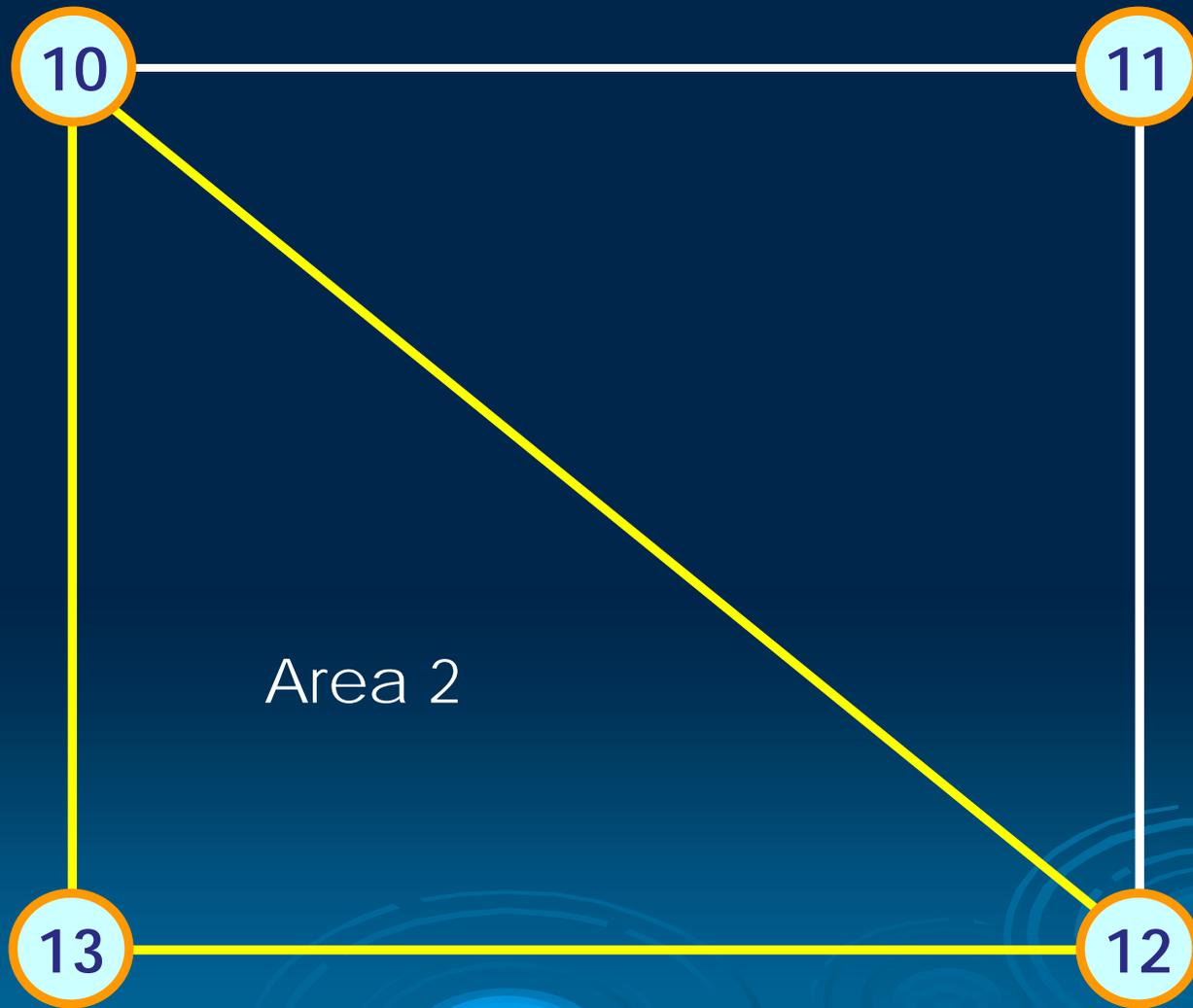
Range Measurements



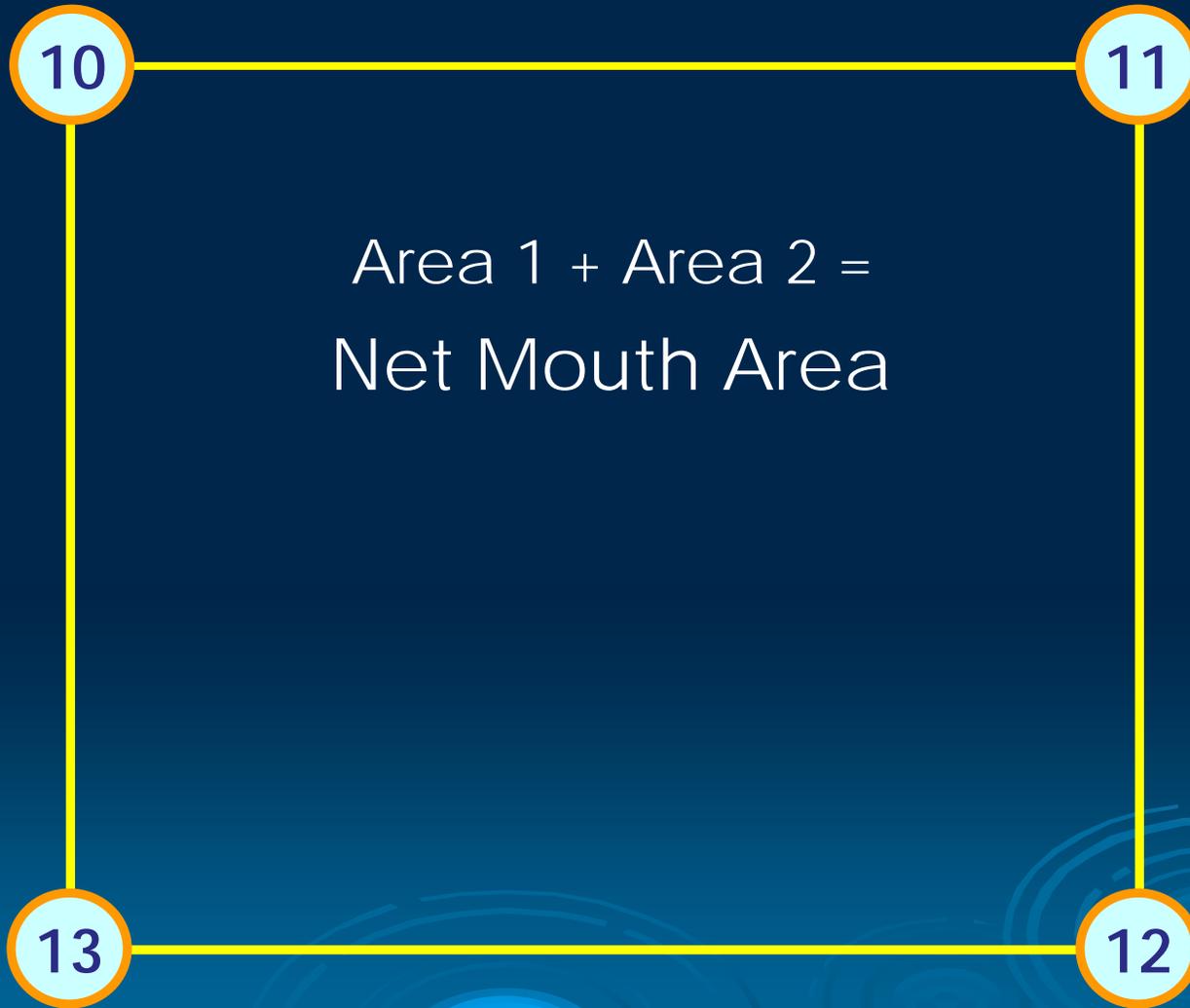
Range Measurements



Range Measurements



Range Measurements



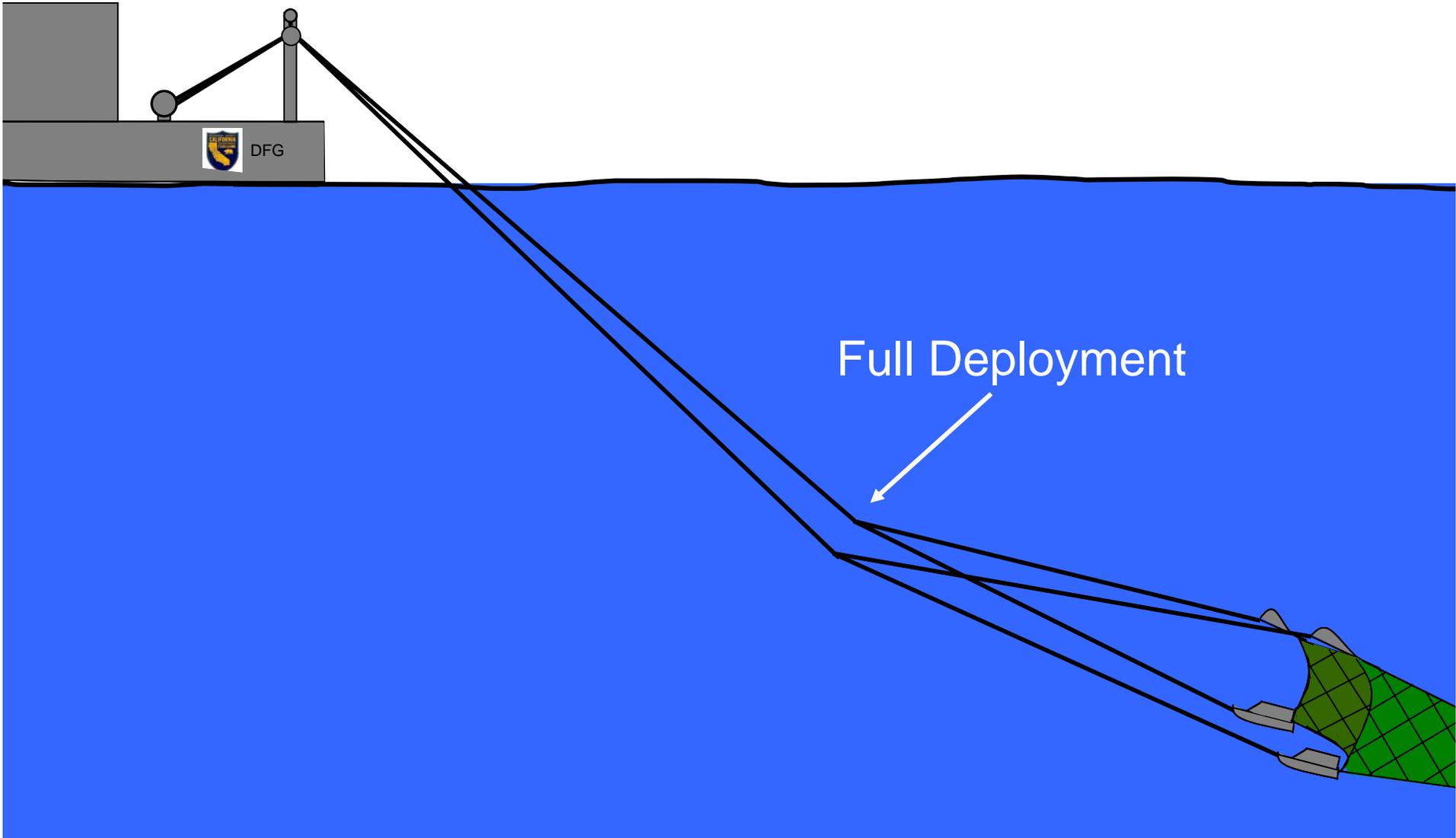
Field Sampling

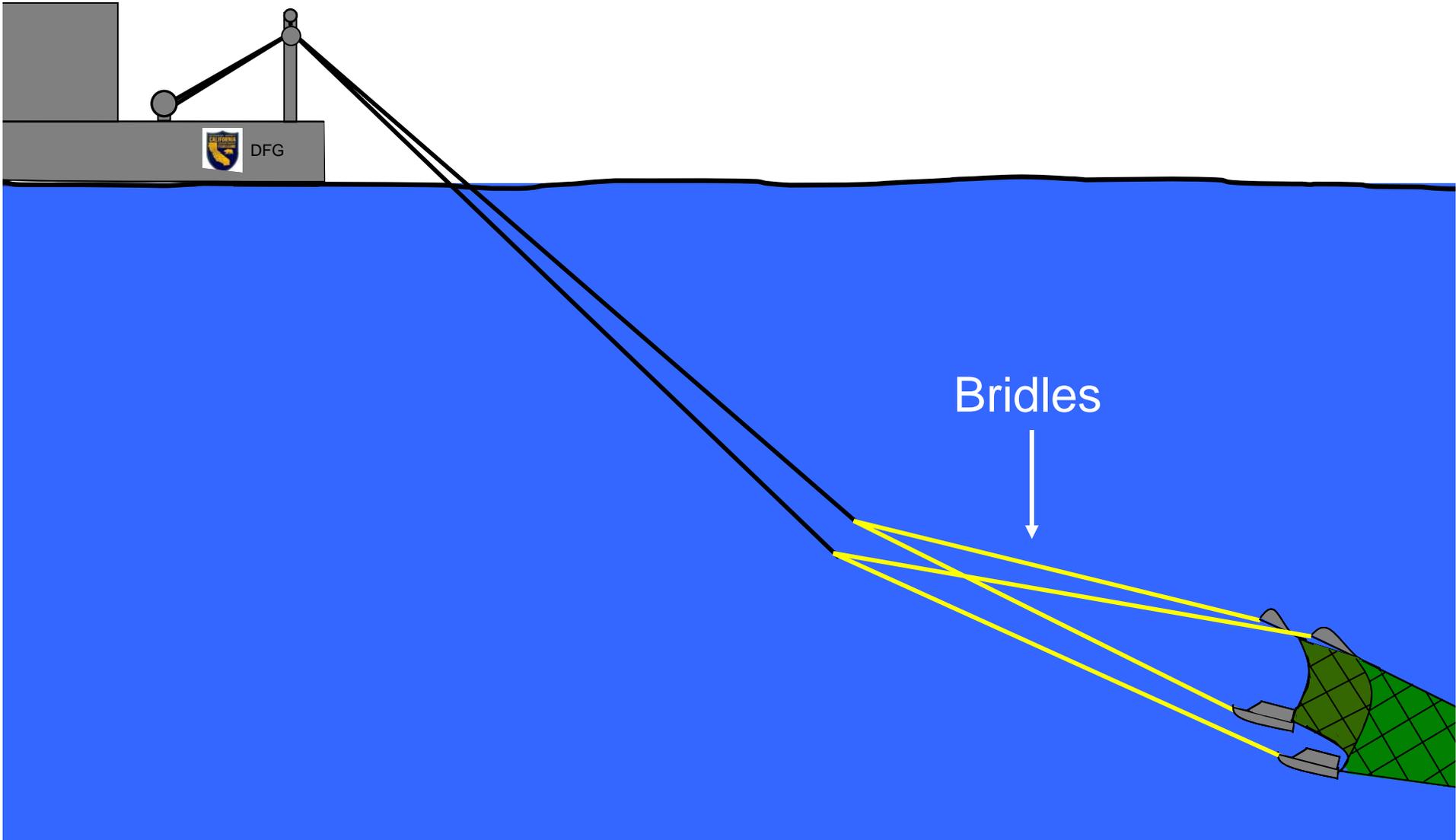
- August and September, 2009
- Goal: 12 tows/vessel
- Similar weather & tidal conditions
- Upstream of Antioch Bridge, channel

How Data Was Processed

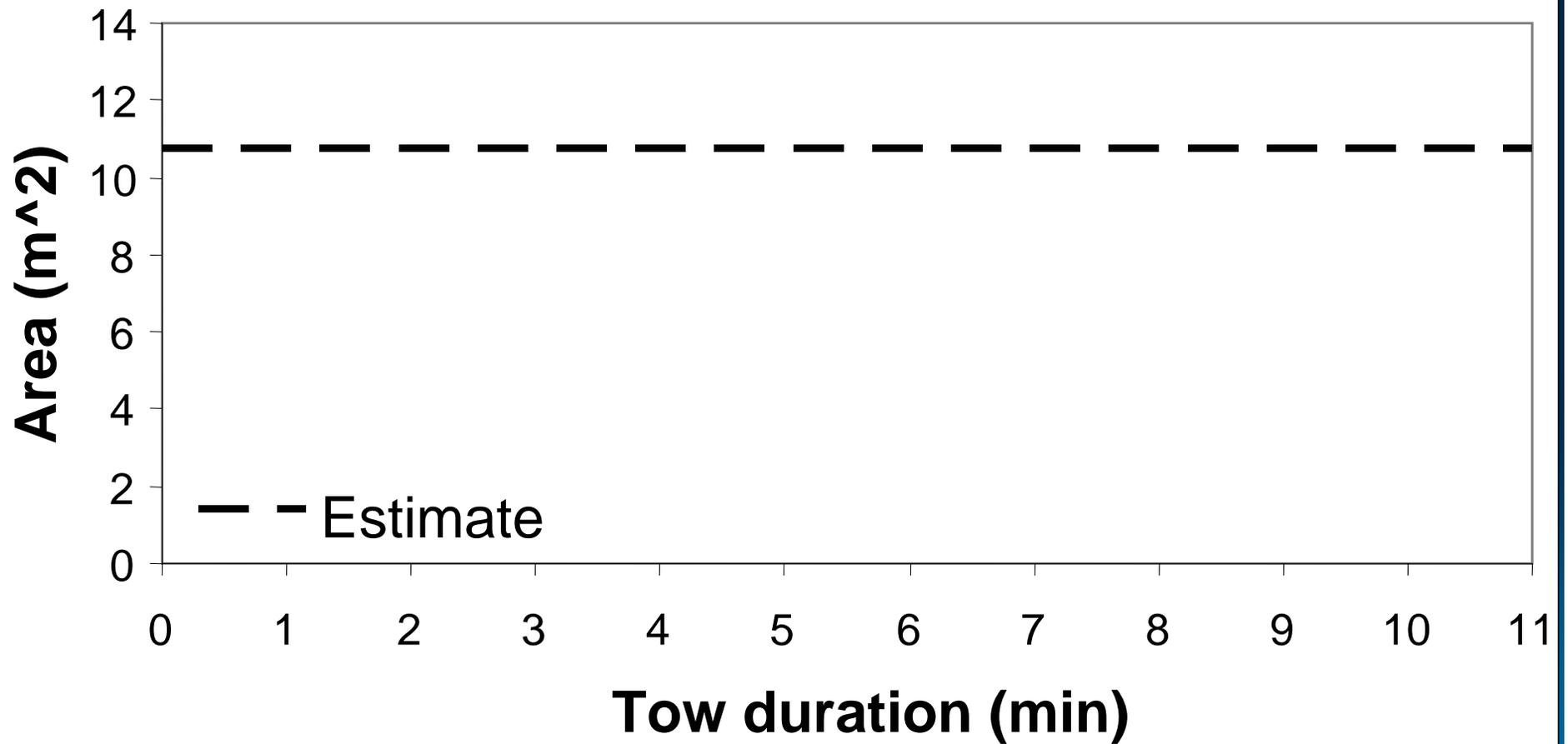
- Net mouth area
 - Averaged by minute
- Depth loggers
 - Averaged by minute



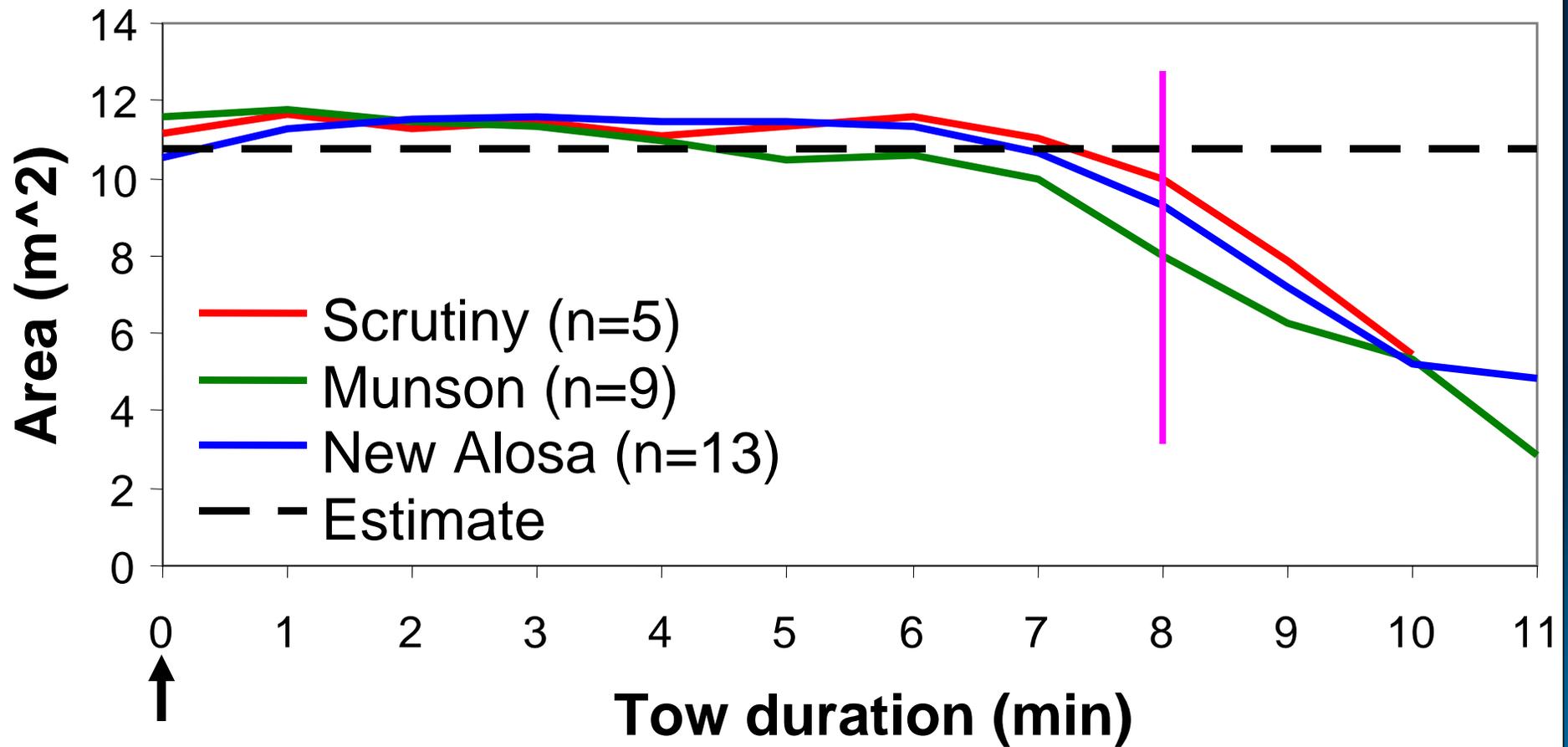


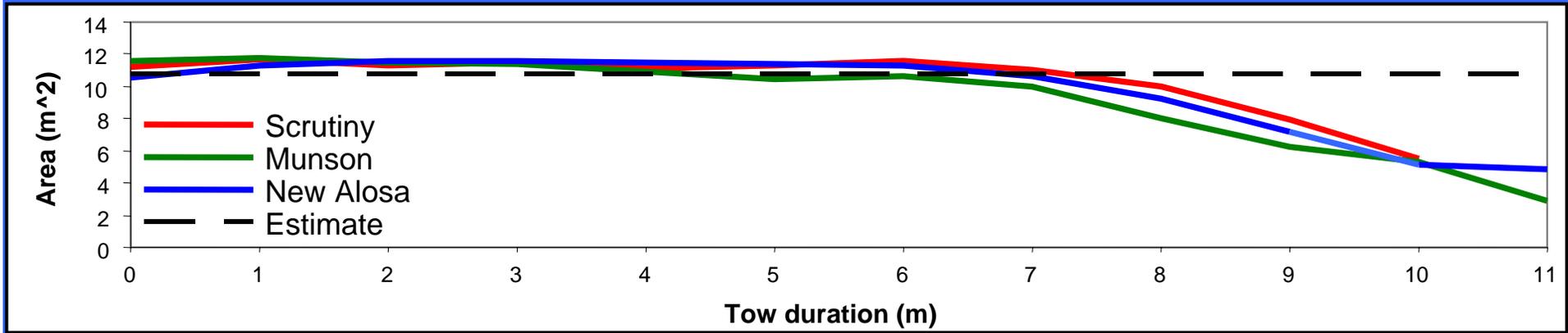
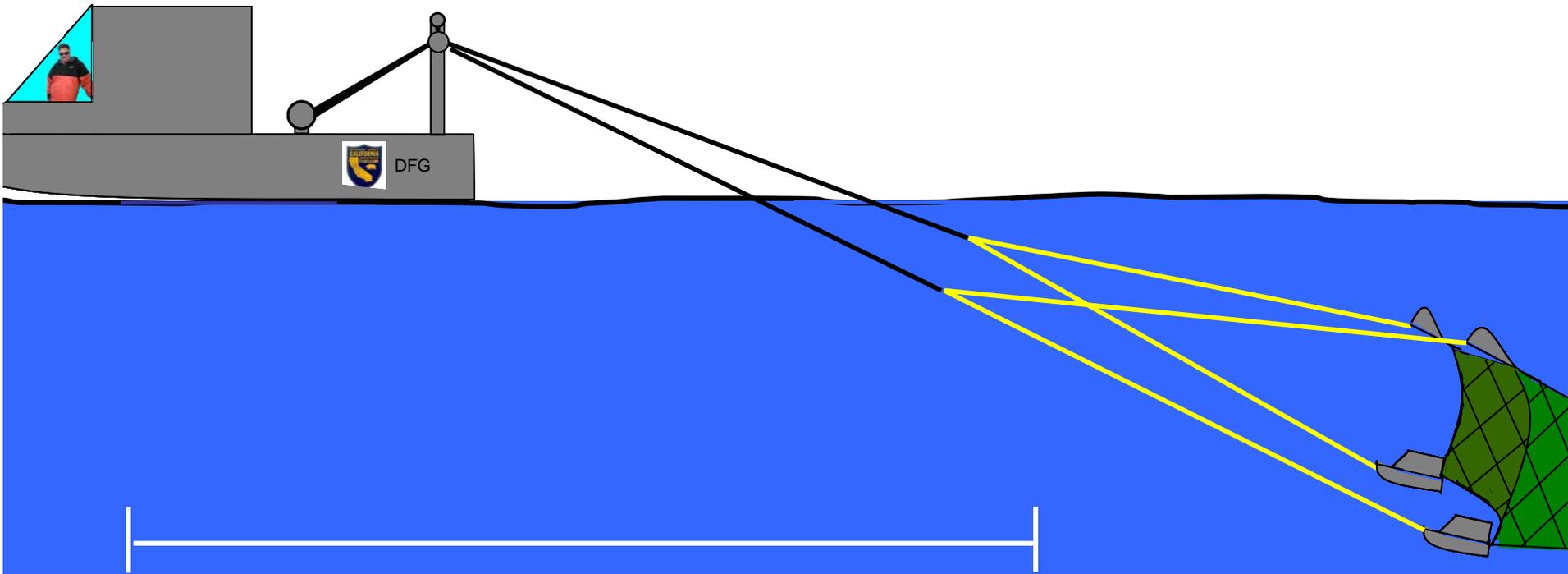


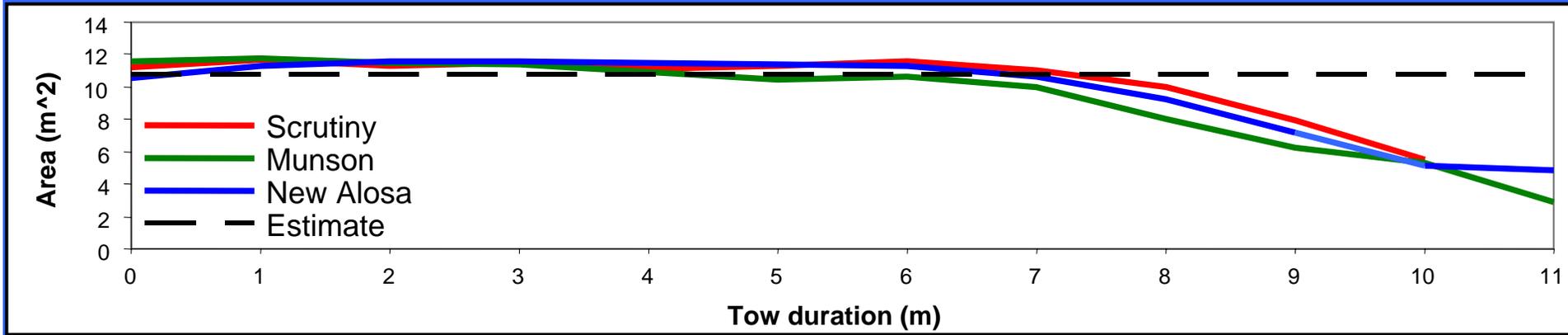
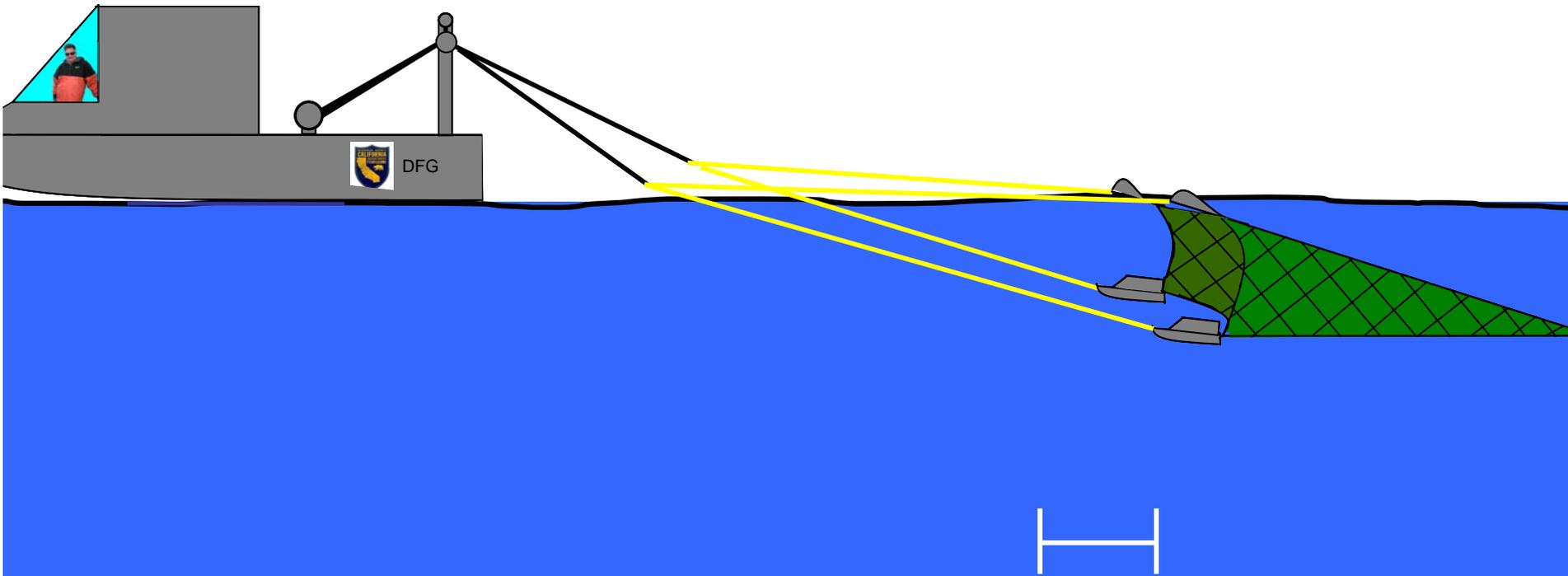
Average Net Mouth Area

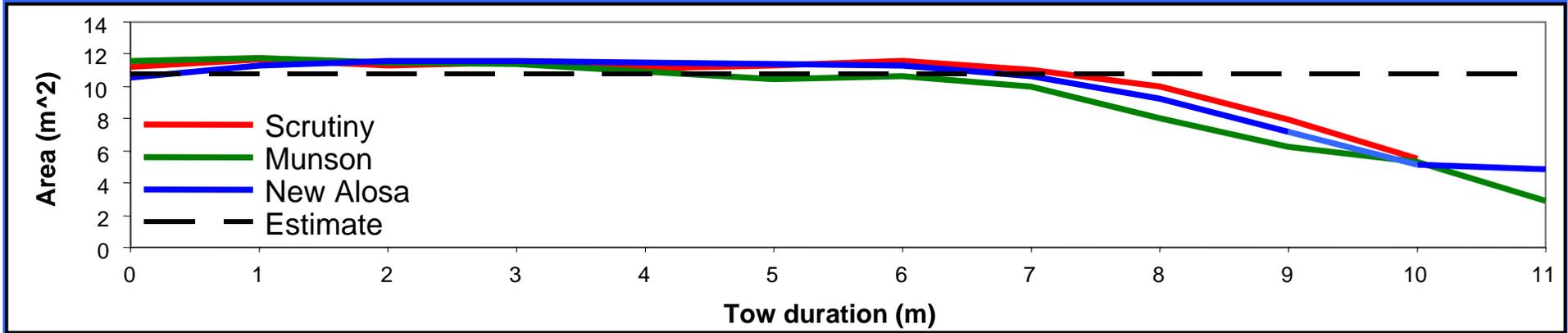
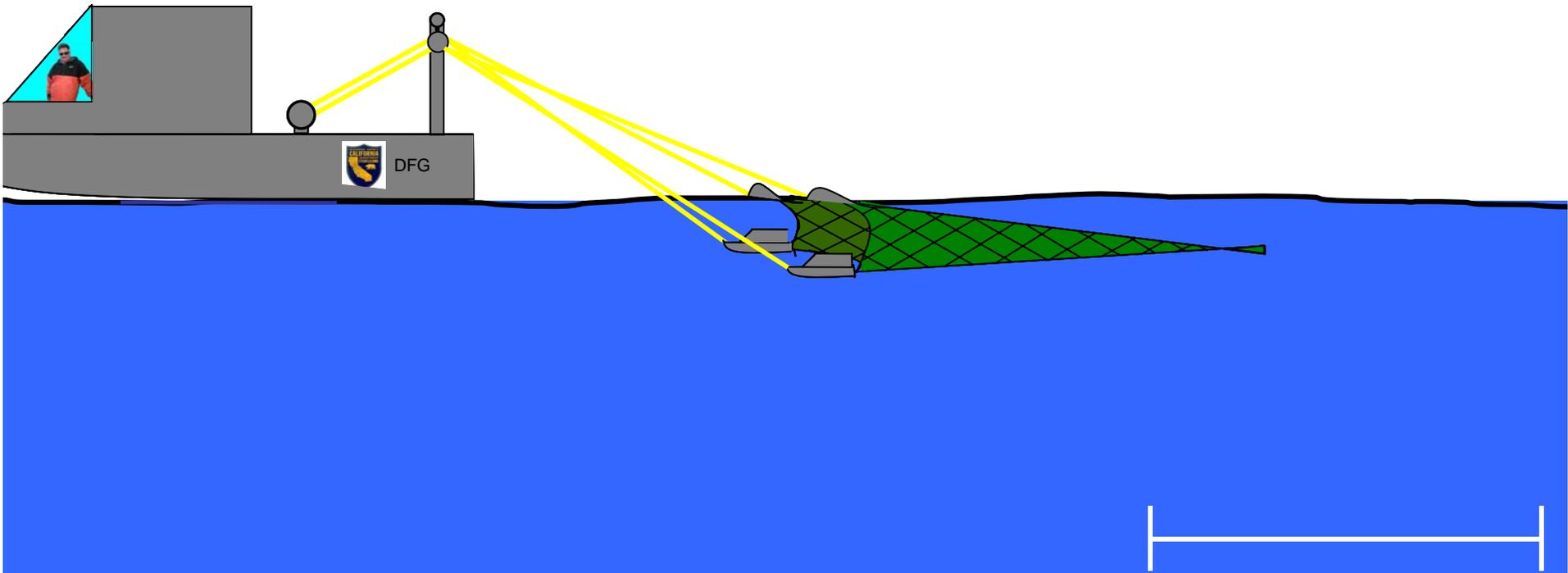


Average Net Mouth Area





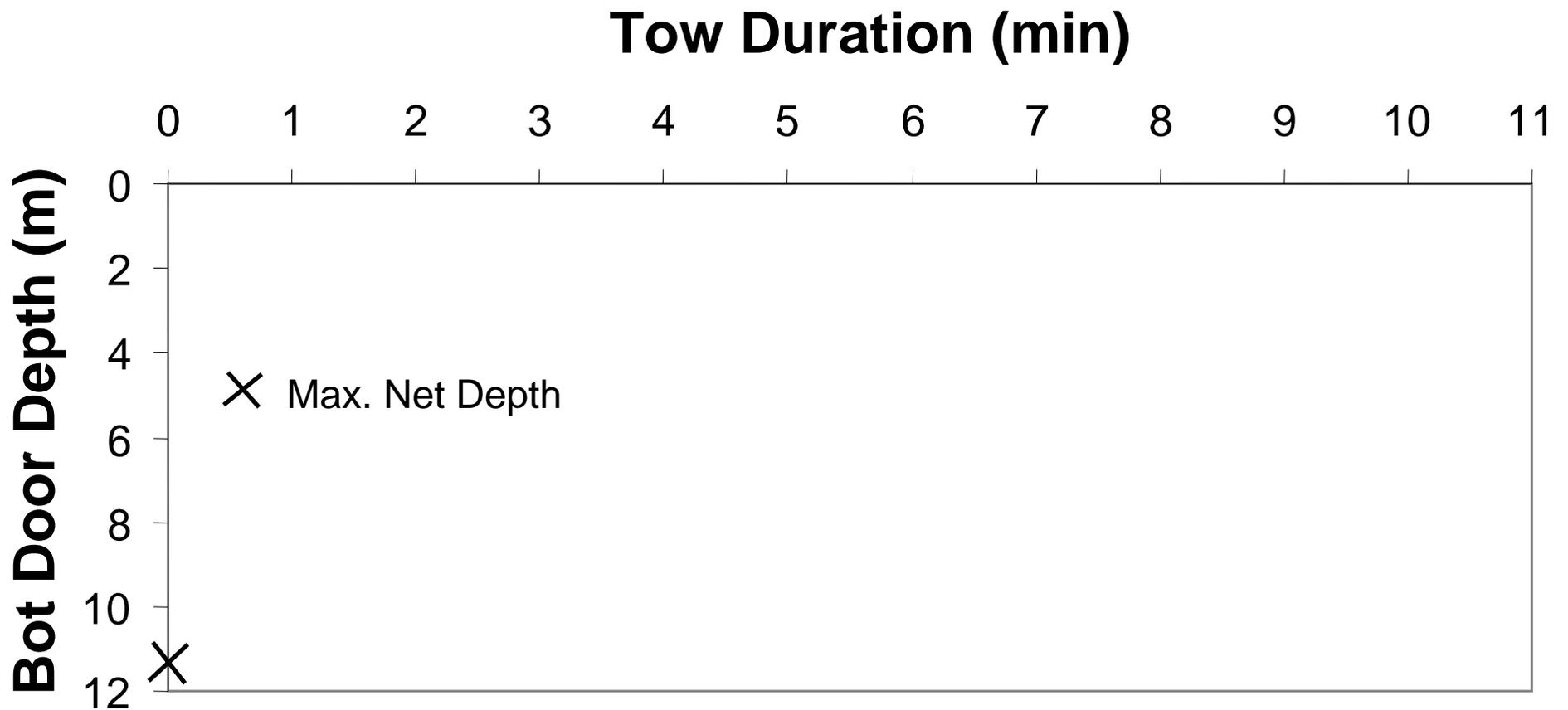




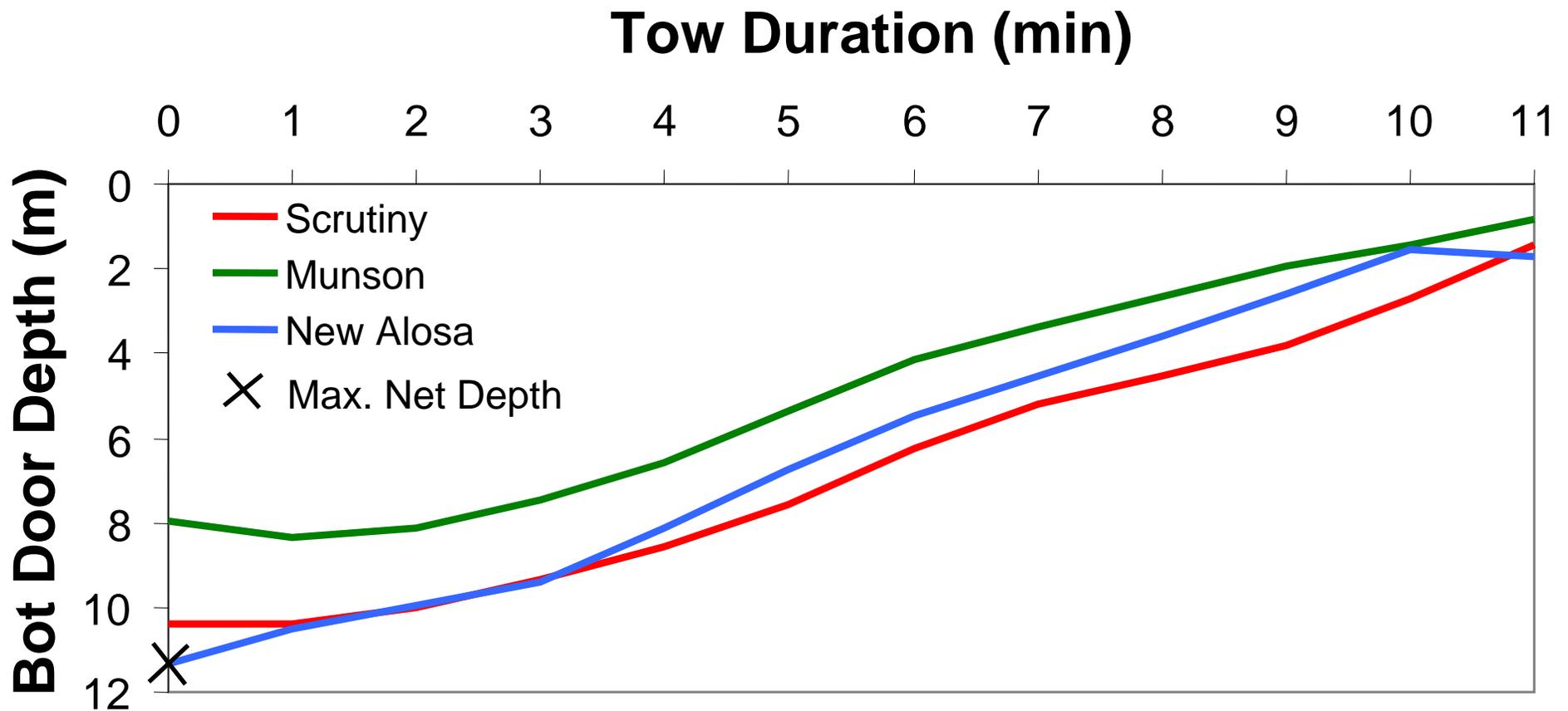
The Depth Logger



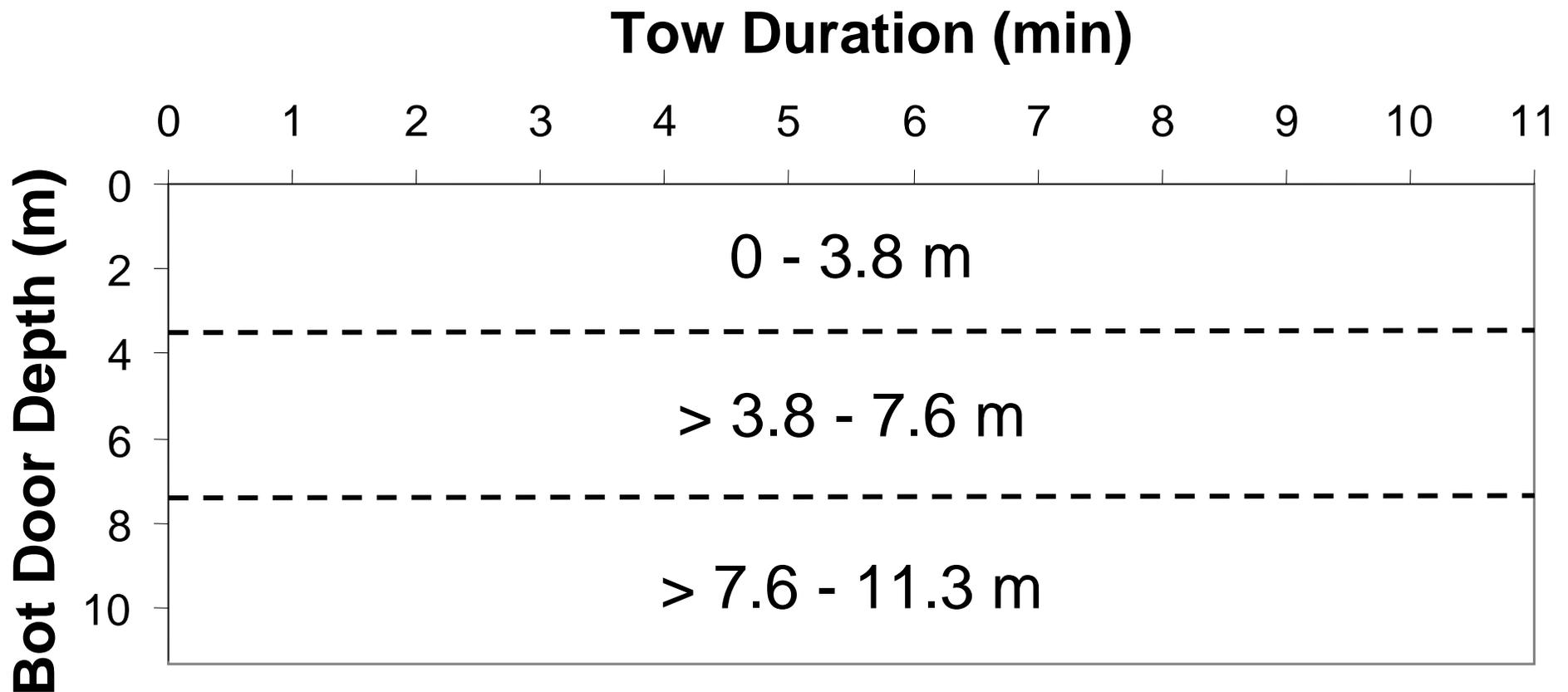
Gear Depth



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.
- Gary Webb, Kent Hespeler, Ken Flowers, Mike Silva, Brian Delano, David Hull, Amber Aguilera, Garrett Peterson, Cole Paris, and Cynthia Laughlin for their assistance in the field.