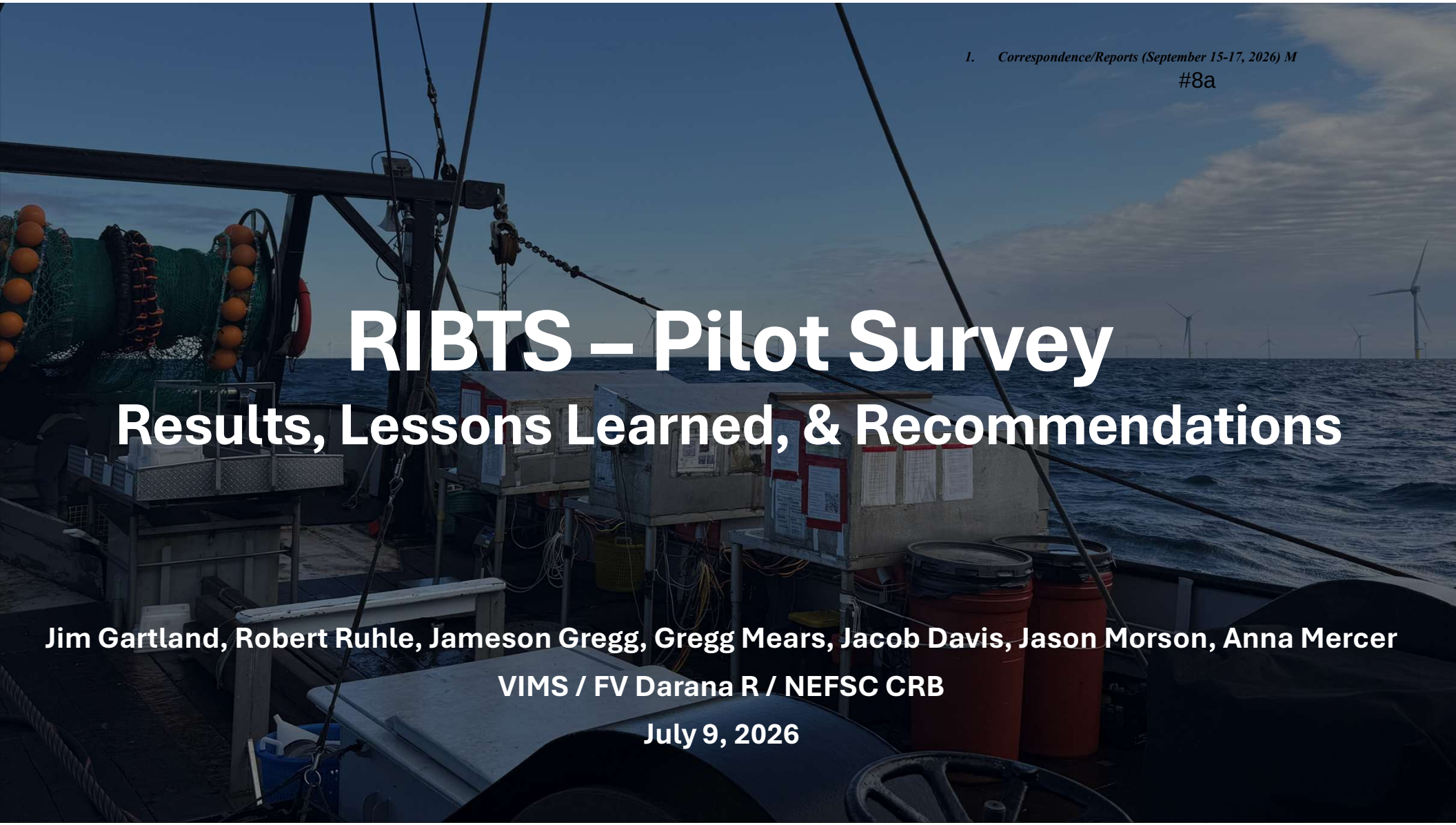


RIBTS – Pilot Survey

Results, Lessons Learned, & Recommendations

Jim Gartland, Robert Ruhle, Jameson Gregg, Gregg Mears, Jacob Davis, Jason Morson, Anna Mercer

VIMS / FV Darana R / NEFSC CRB

July 9, 2026

Pilot Survey Objectives

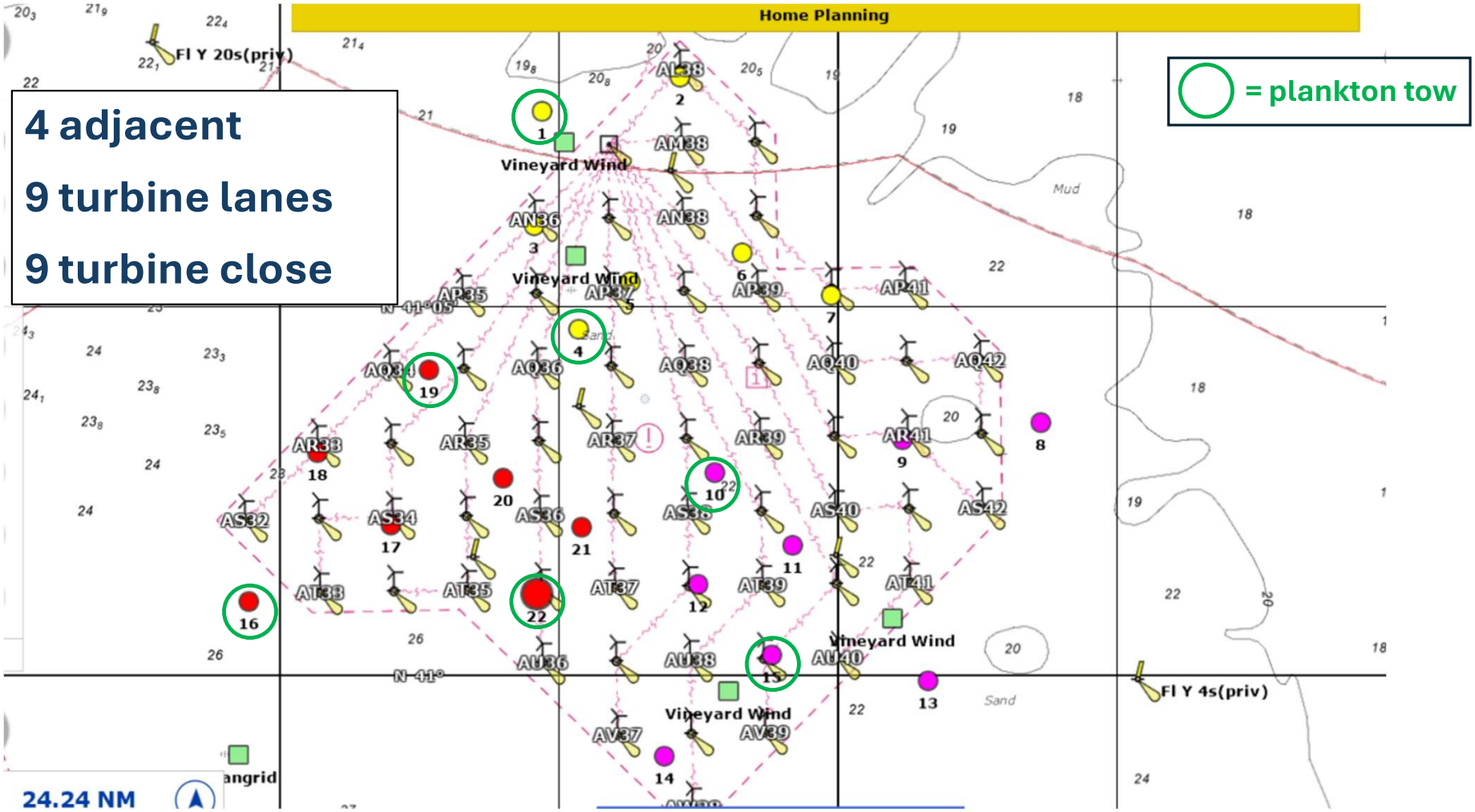
1. Evaluate feasibility of sampling within an offshore development area (ODA), including minimum safe working distance from turbines.

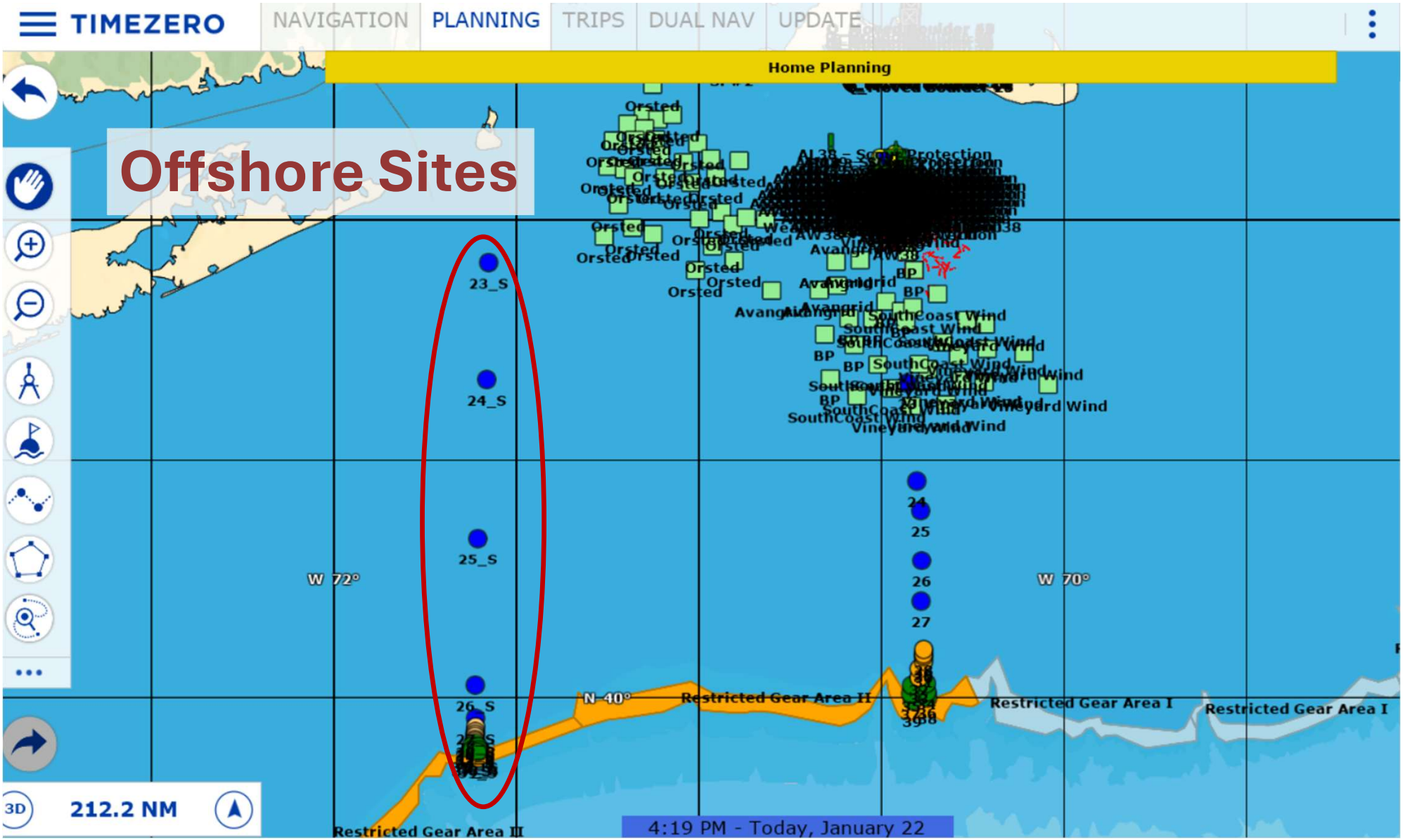
2. Quantify survey trawl performance across a broad depth range spanning from ODA to shelf edge.

3. Evaluate operational efficiency of all sampling components in wind farms & offshore.

   - Includes replicating NEFSC BTS oceanographic data collection (Seabird/ Niskin/Plankton) & NEFSC/VIMS biosampling.

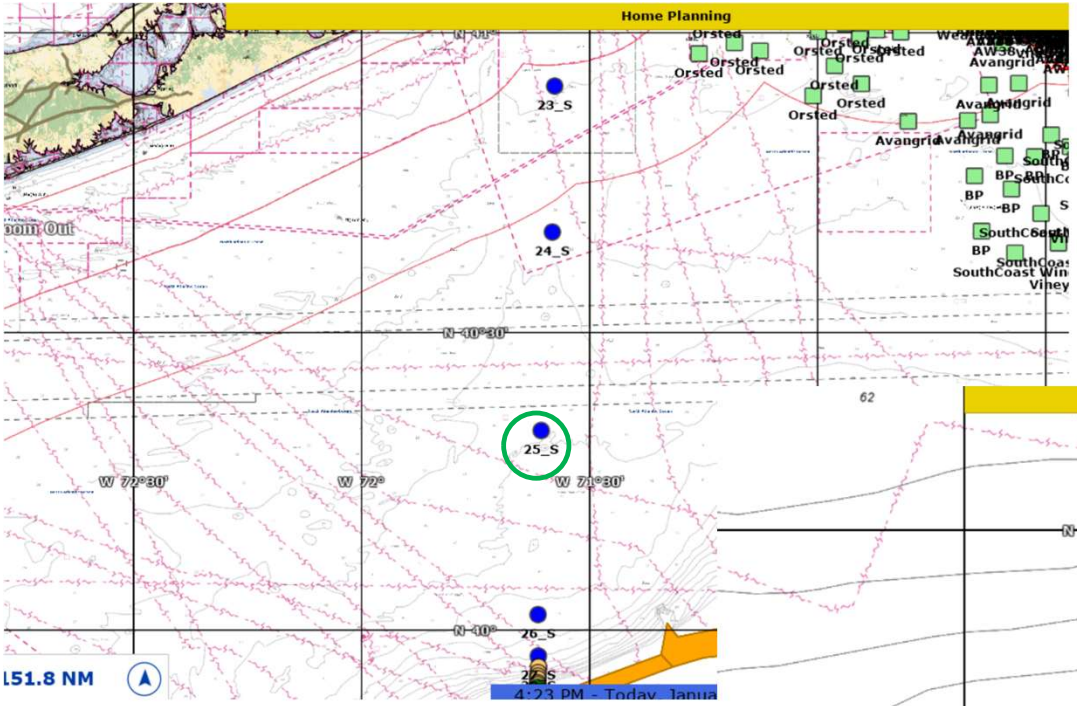
Vineyard Wind Sites

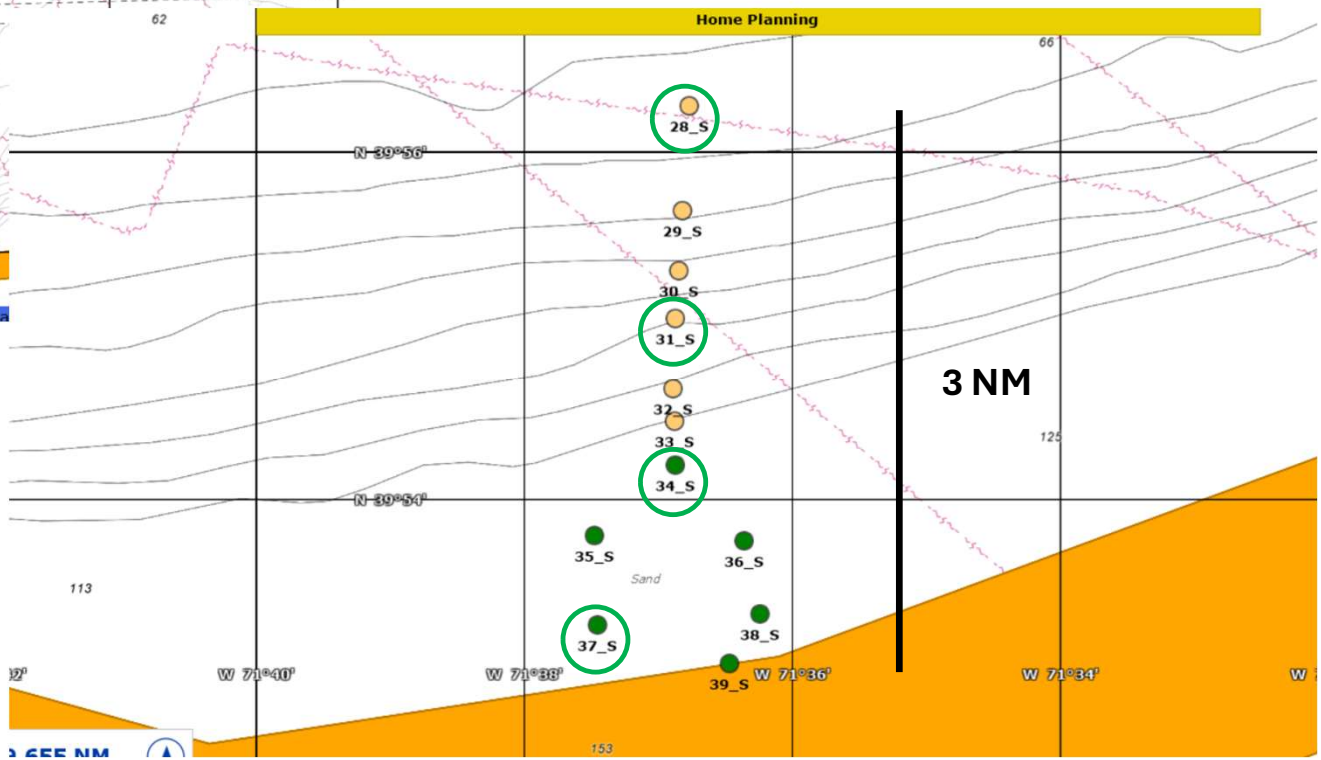



TIMEZERO
NAVIGATION
PLANNING
TRIPS
DUAL NAV
UPDATE
Home Planning
Offshore Sites
23_S
24_S
25_S
26_S
24
25
26
27
W 72°
W 70°
N 40°
Restricted Gear Area II
Restricted Gear Area I
Restricted Gear Area I
Restricted Gear Area II
Orsted
BP
SouthCoast Wind
Vineyard Wind
3D
212.2 NM
4:19 PM - Today, January 22

Offshore Sites

◯ = plankton tow



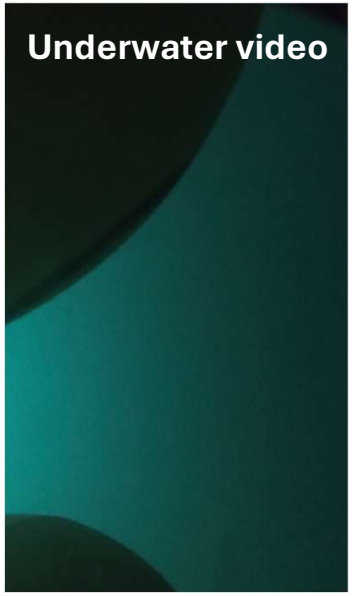


Obj. 1 – ODA Sampling

- Sampled all planned ODA sites.
- Sampling "near turbine" sites at night was risky. Adjacent & lanes were ok.
  - No lights on turbines & unannounced AUV.
- Tide required attention.
  - Monopile-induced turbulence (swirlies).
- Recorded underwater video as towed past turbine. Poor visibility.

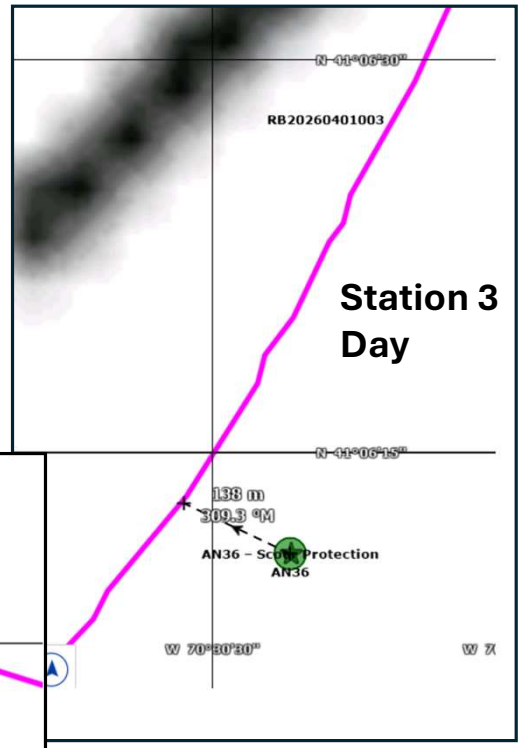
	Day	Night
Turbine	7	2
Lane	6	3
Adjacent	2	2

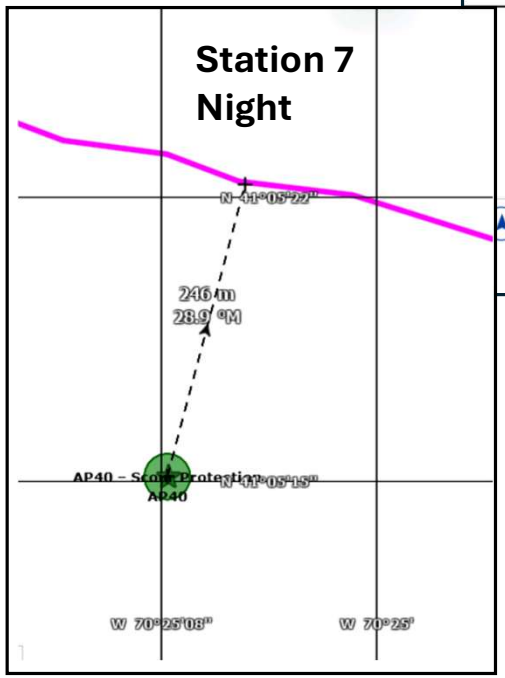
68% day / 32% night



Obj. 1 – Minimum Safe Distance

- **Day – 138 m turbine; 119 m scour**
  - **450’ turbine; 390’ scour**
- **Night – 246 m turbine; 227 m scour**
  - **807’ turbine; 744’ scour**

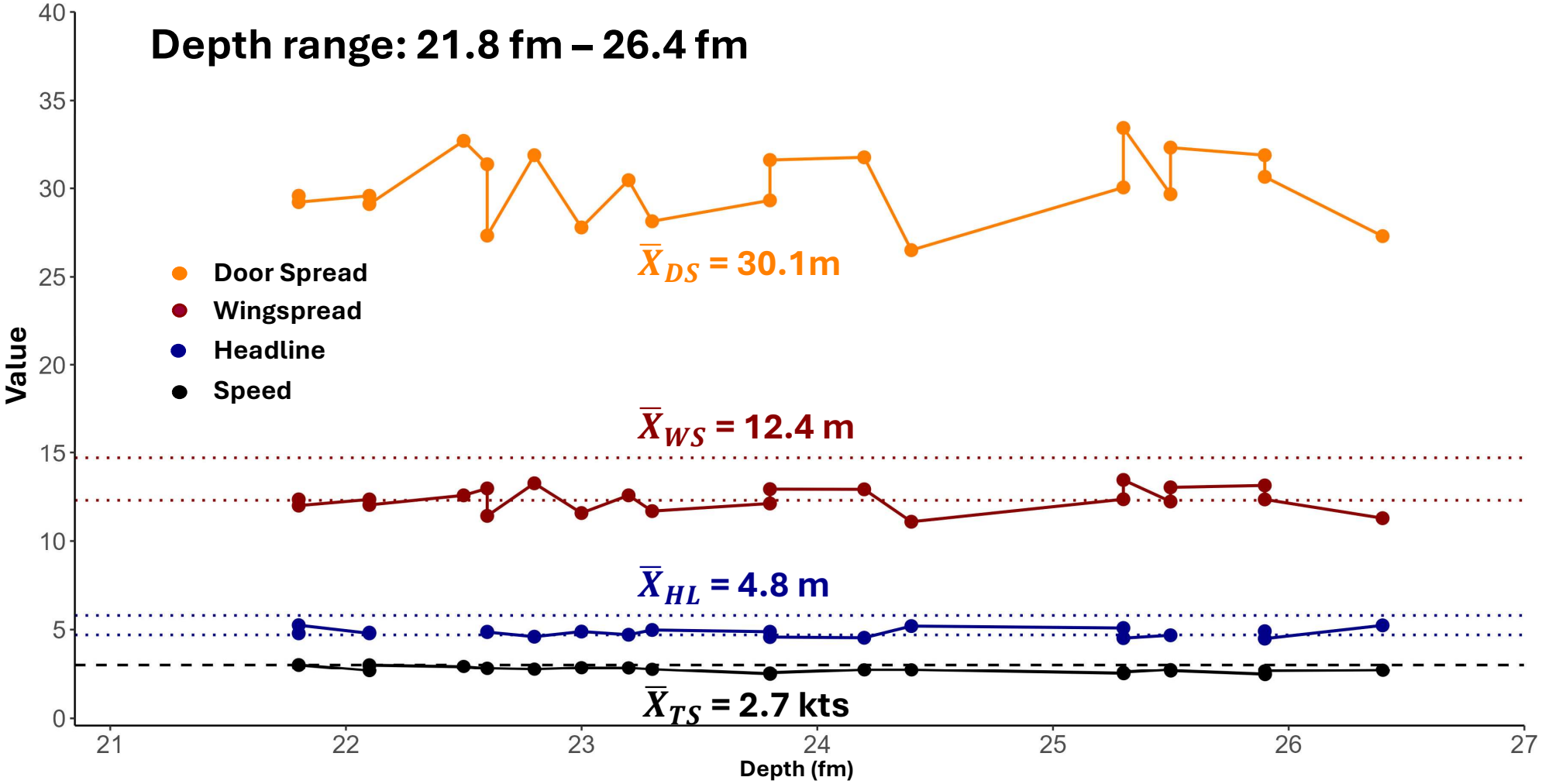




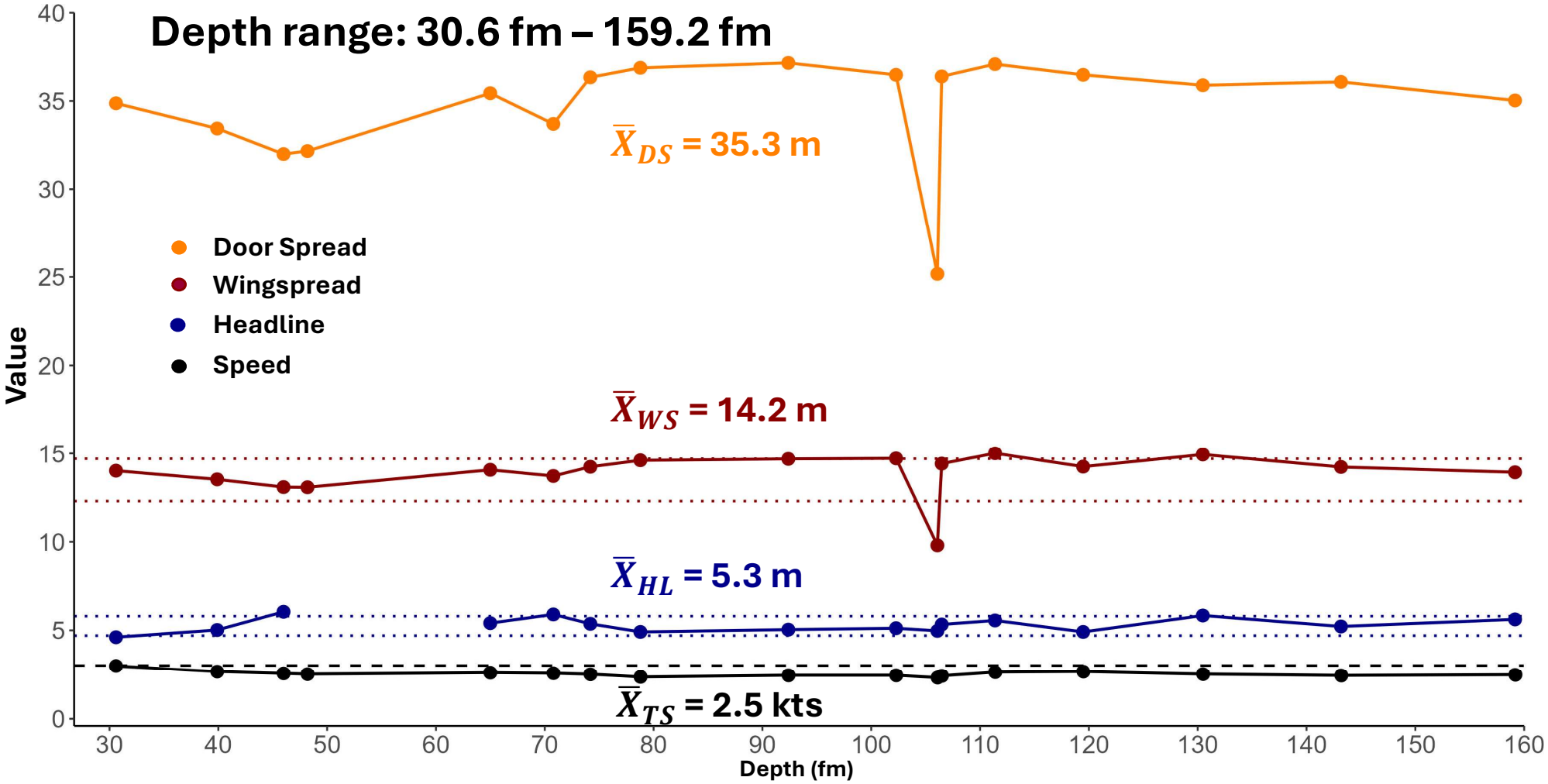
Obj. 1 – Lessons Learned & Recommendations

1. Conducting bottom trawl survey operations in & around an ODA is possible with an industry vessel.
2. Minimum safe towing distance from a turbine structure (i.e., scour protection) was ~120 m during the day and ~225 m at night.
3. Sampling adjacent to ODA & in turbine lanes (over transmission cables) was not a problem, day or night. Near turbines ok during daylight hours.
4. Towing near turbines at night was quite risky. Recommend eliminating night tows near turbines in future RIBTS operations.
5. Recommend creating a repository of tow tracks – gather from Phase I, wind farm surveys, industry (?).
6. Recommend developing recon/fact sheets for ODAs to avoid surprises (e.g., ADLS in Vineyard = very dark!).
   - Recommend establishing rapport with ODA liaisons (high turnover).

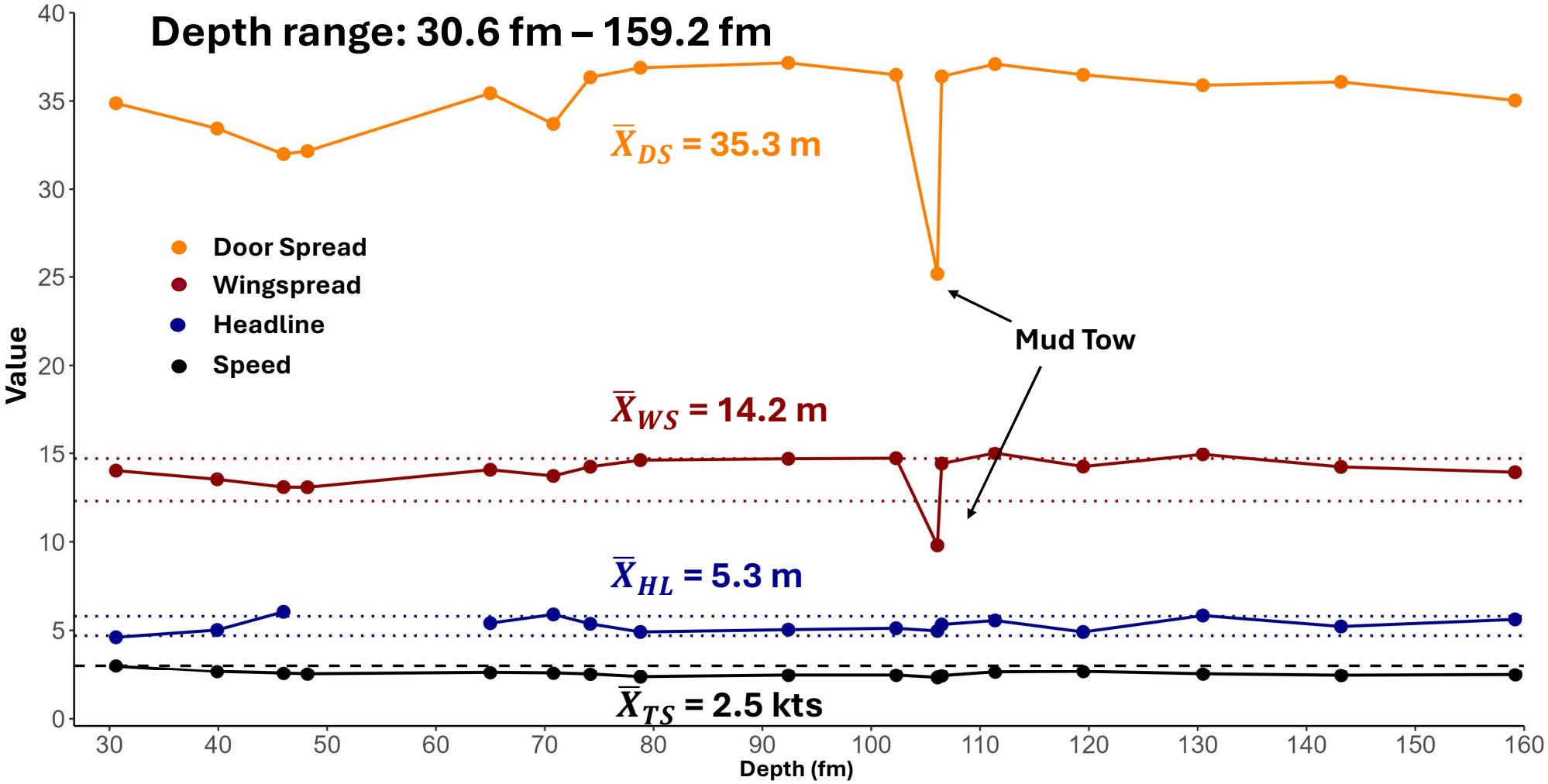
Obj. 2 – Gear Performance in ODA



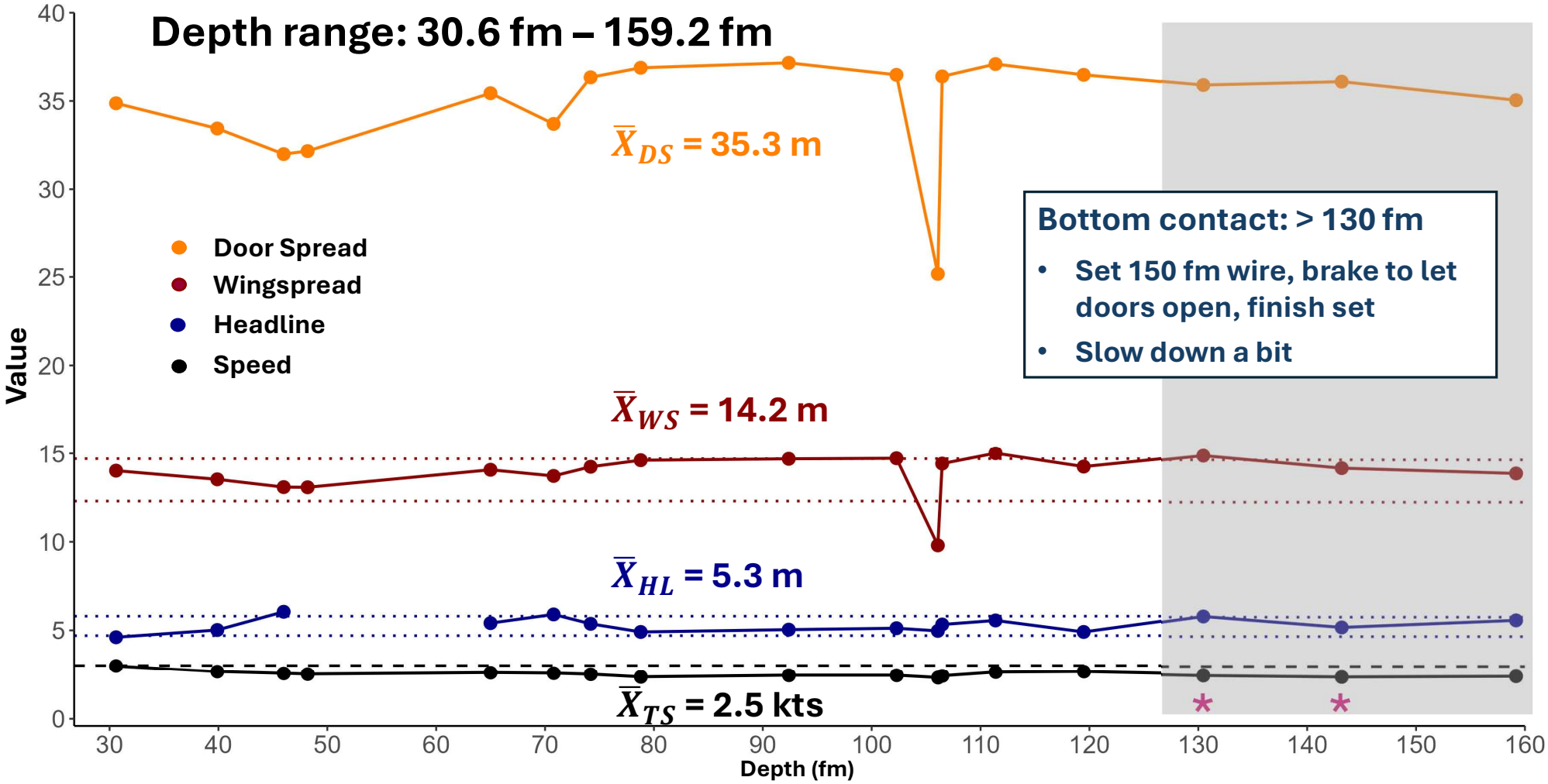
Obj. 2 – Gear Performance Offshore



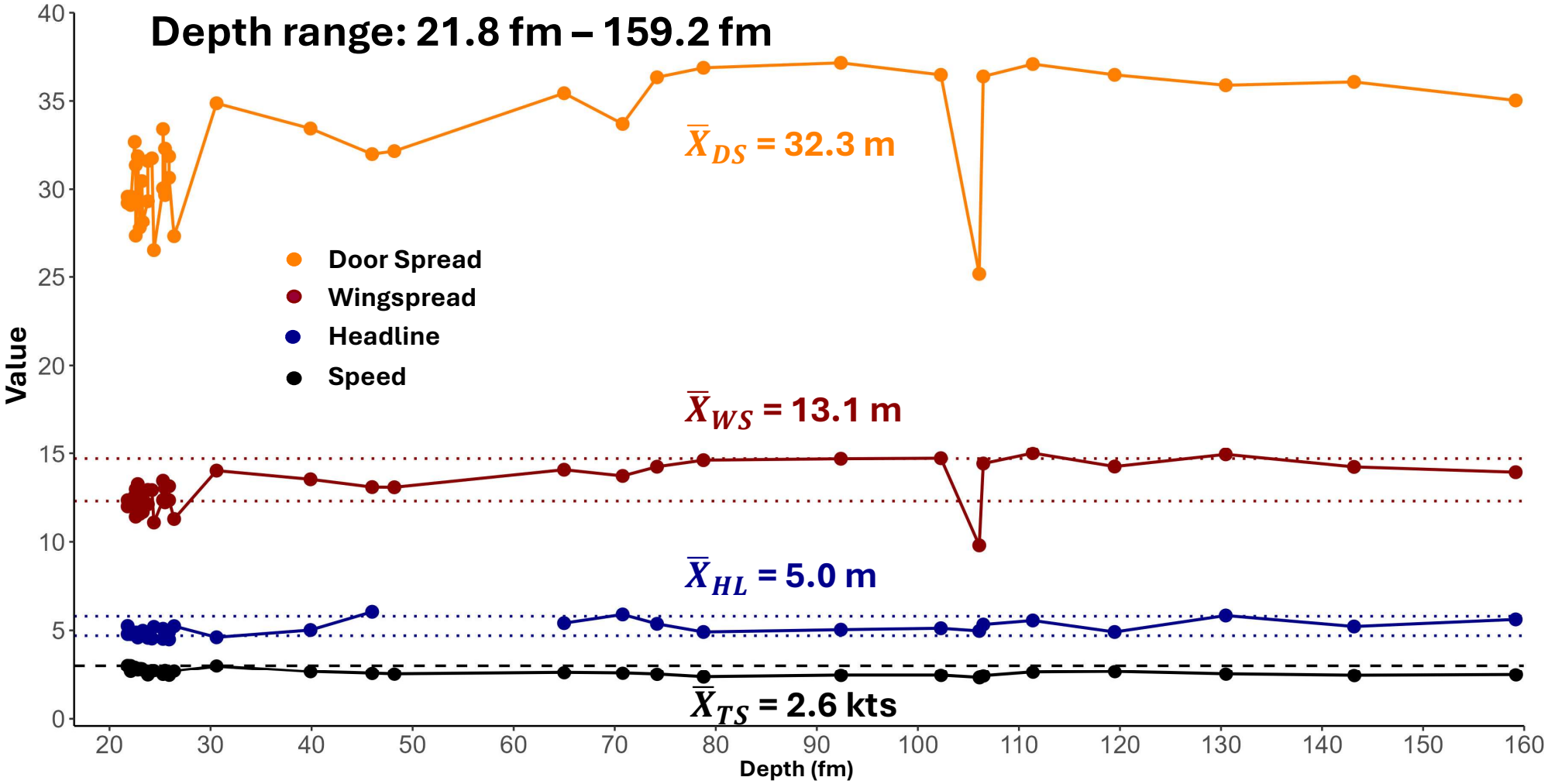
Obj. 2 – Gear Performance Offshore



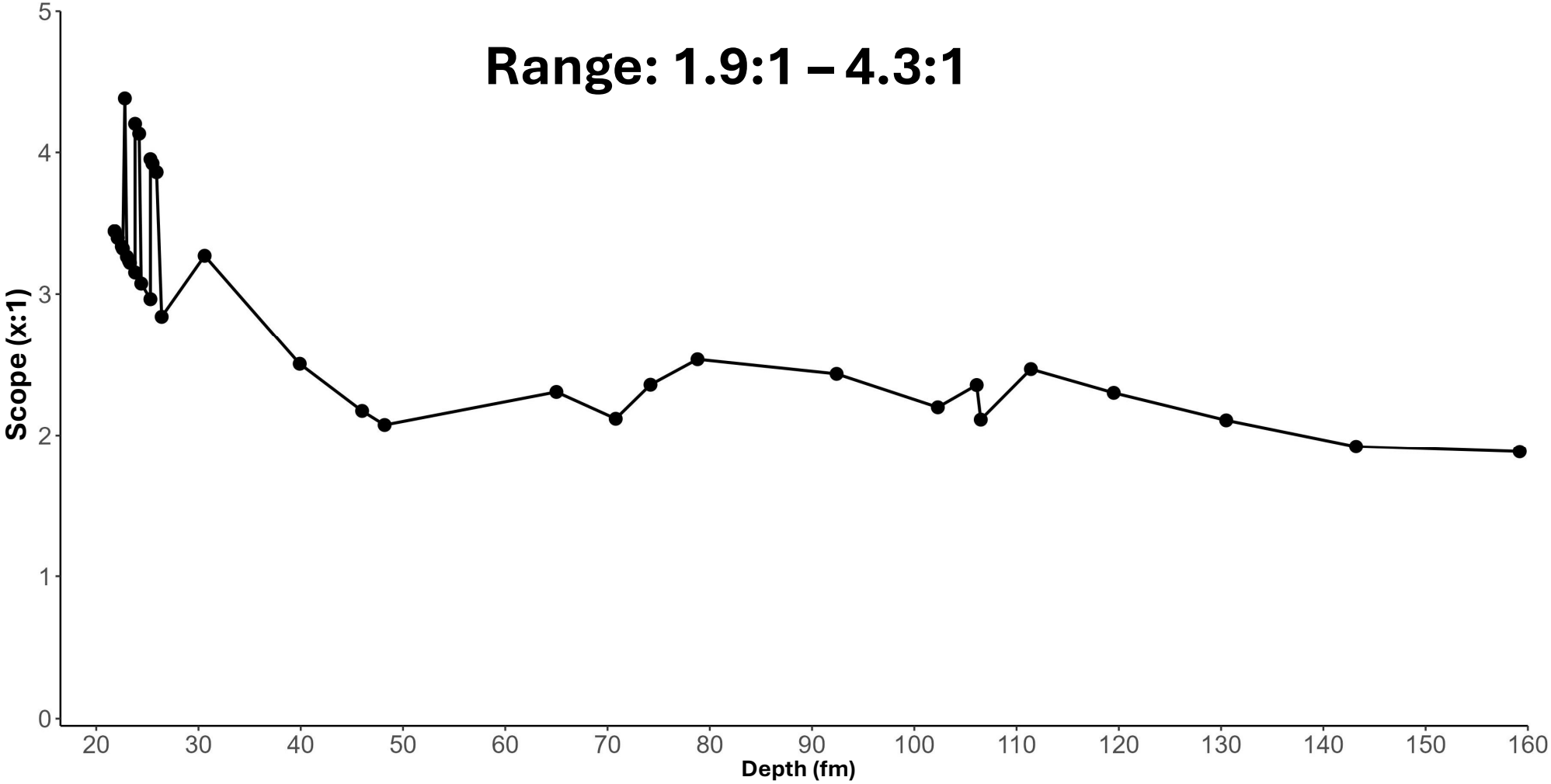
Obj. 2 – Gear Performance Offshore



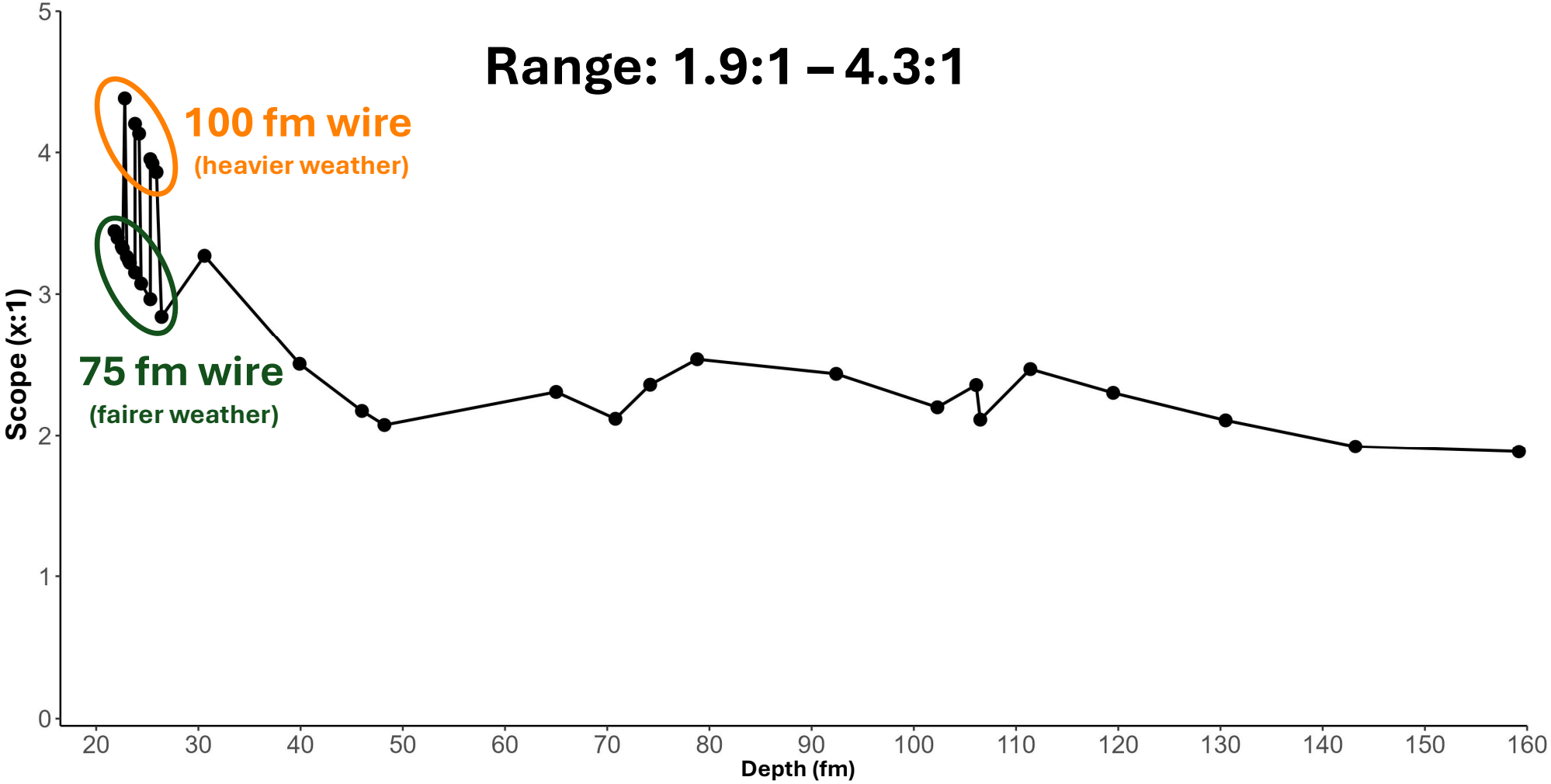
Obj. 2 – Gear Performance Overall



Obj. 2 – Trawl Wire Scope



Obj. 2 – Trawl Wire Scope



Obj. 2 – Lessons Learned & Recommendations

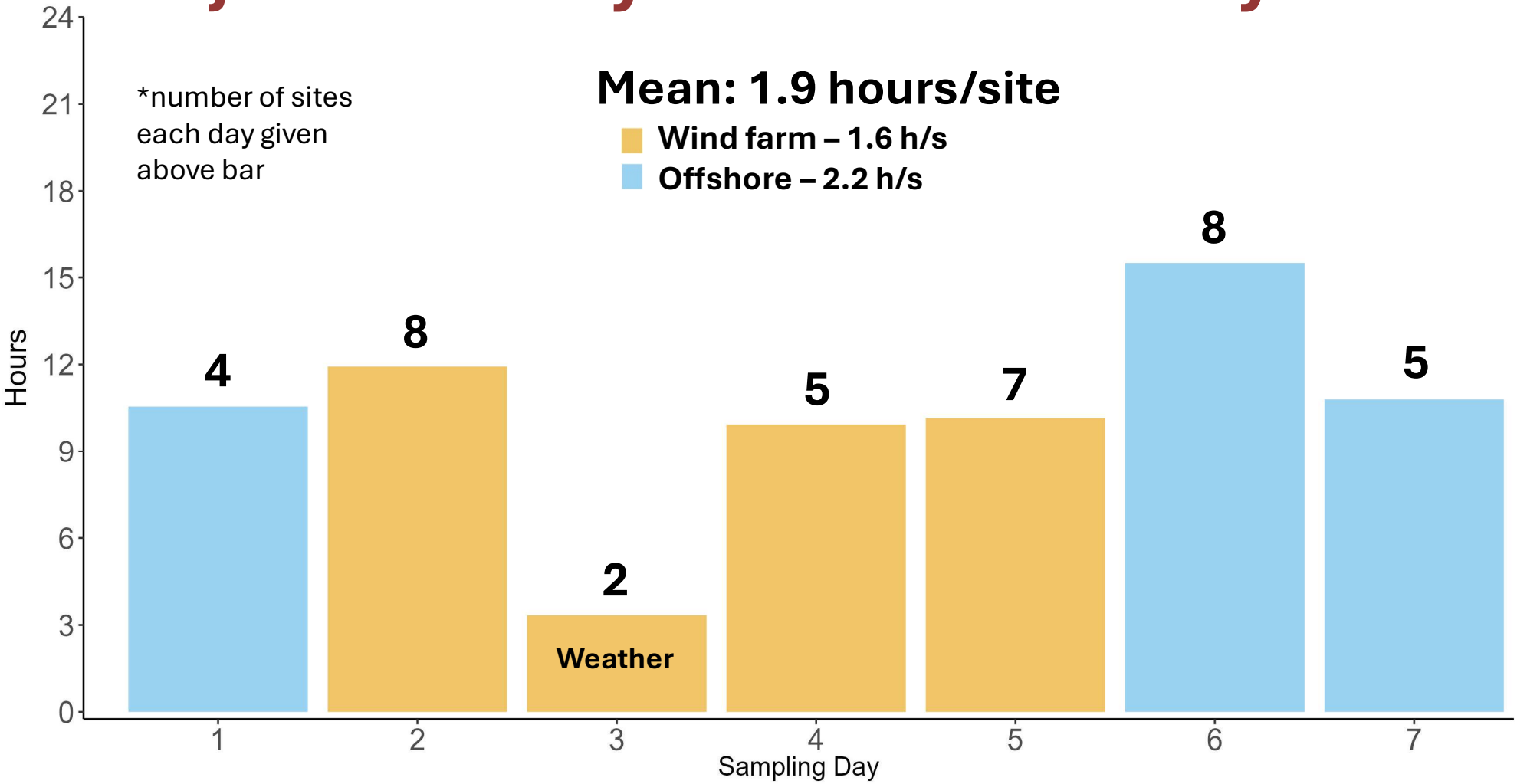
1. NEAMAP 400 x 12 cm net w/ Thyboron Type IV 66” doors fished from 90’ industry vessel with 19.5’ bollard spread remained within peer-reviewed acceptable geometry from 22 – 160 fm depth. No trends in headline or wingspread were observed.
2. It was necessary to adjust wire out (scope) in wind farm to account for sea state (heavier seas = more wire).
3. When sampling ≥130 fm, brake at 150 fm of wire out, allow gear to open, then finish setting out to attain acceptable wingspread and headline height (otherwise net struggles to spread). Recommend implementing this approach during future phases.
4. Recommend allowing some flexibility in wire scope & towing speed-over-ground at deeper depths to maintain geometry (1.9:1 – 3.3:1 scope; 2.4 – 3.0 kts).
5. Recommend using a bottom contact sensor on all tows & the depth option on headline sensor. Wingspread & headline can look right when the net is “flying”.
6. Recommend using the Simrad TP90 system, or equivalent, to quantify net position. Valuable when towing close to turbines (safety) and in deep water (more accurate sampling location).

Obj. 3 – Evaluate Operational Efficiency

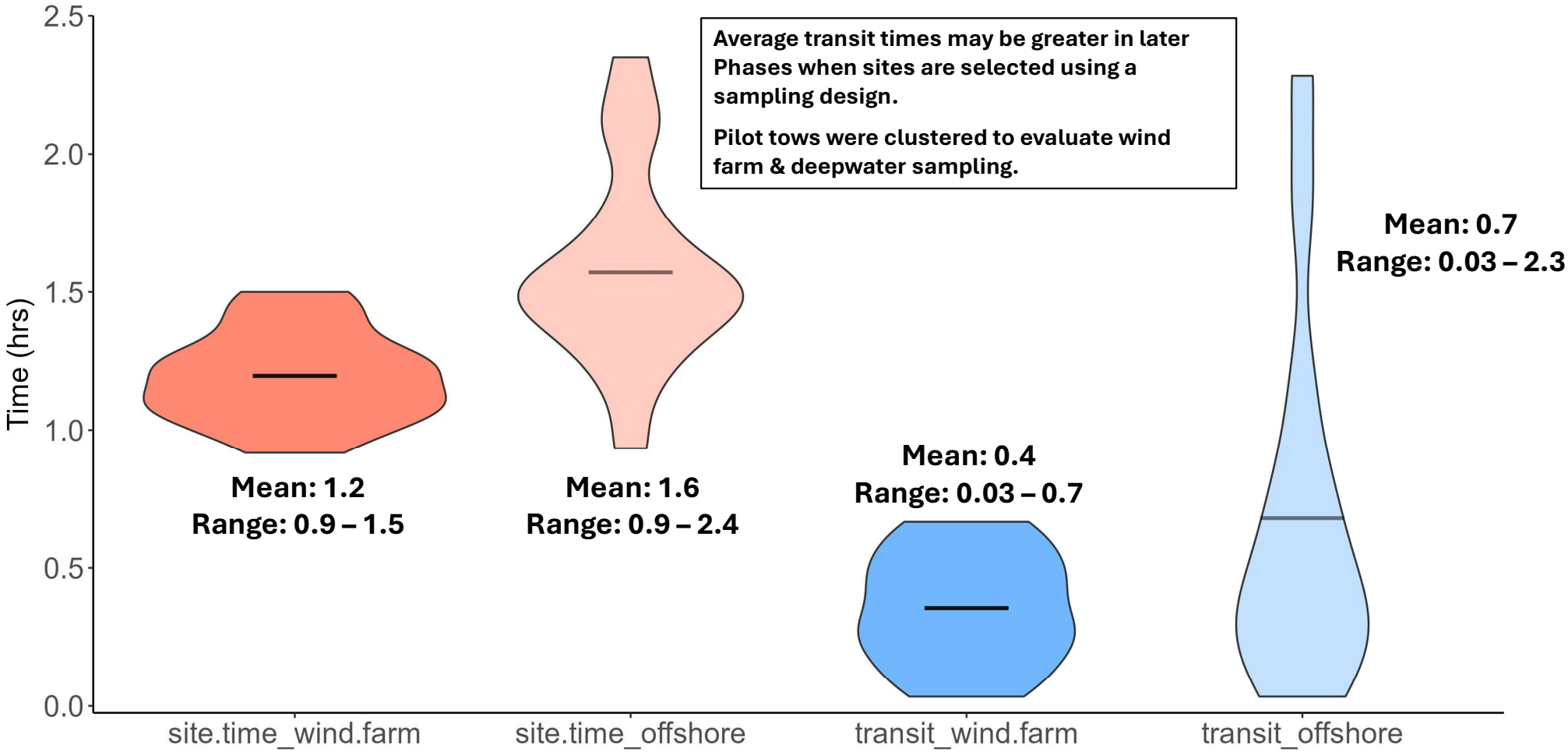
Available Time Data

- Total time on station
- Transit time
- Site evaluation
  - Initial
  - Run site
- Hydrographic
  - Preparation
  - Cast
  - CTD data
  - Niskin sample
  - Plankton sample
- Hydro-to-fishing
- Fishing
  - Set
  - Tow
  - Haul
- Catch Processing
  - Sort
  - Catch data collection
  - Biosample (lab) acquisition

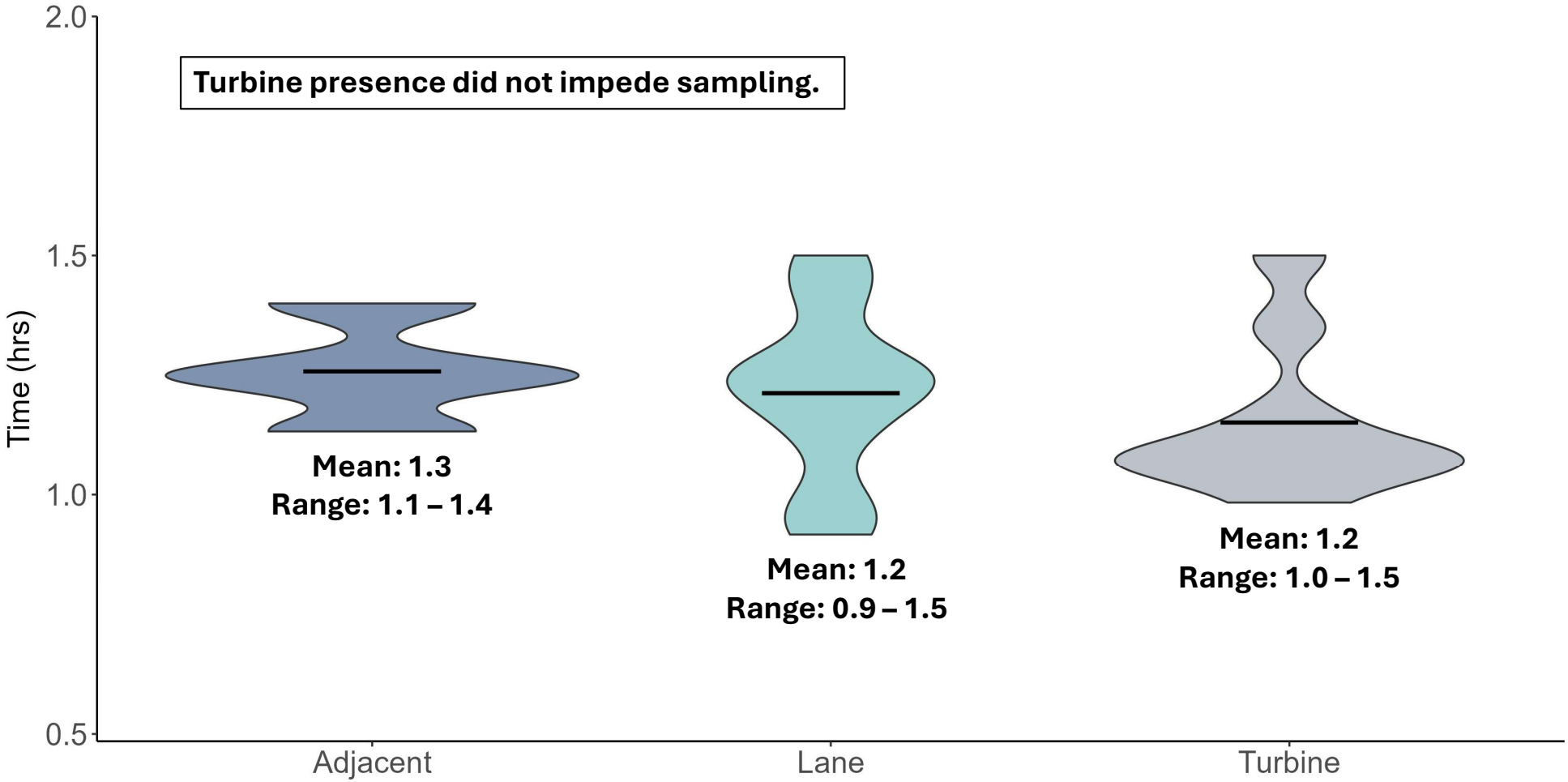
Obj. 3 – Workday Time & Productivity



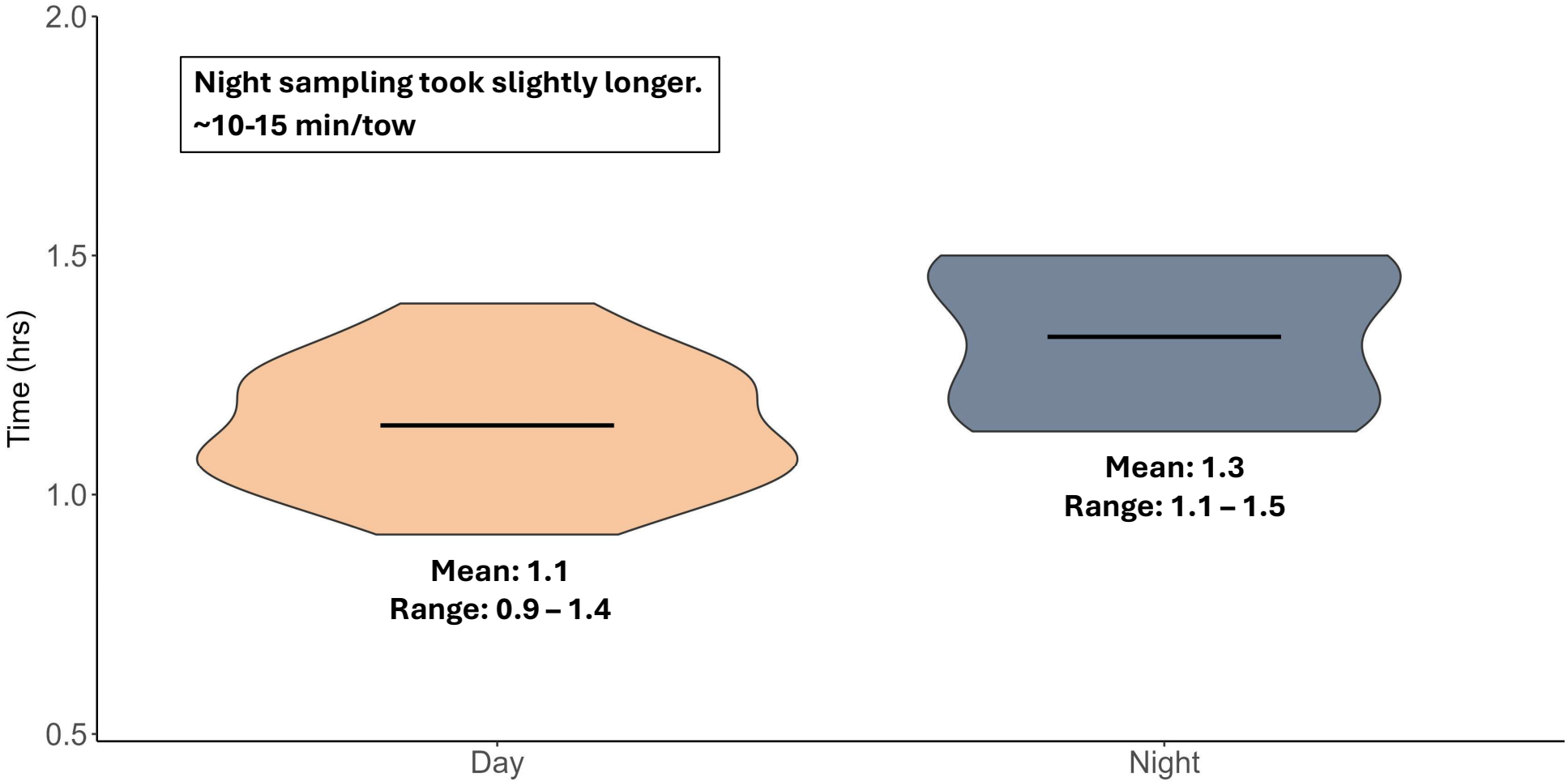
Obj. 3 – Time on Site & Transit



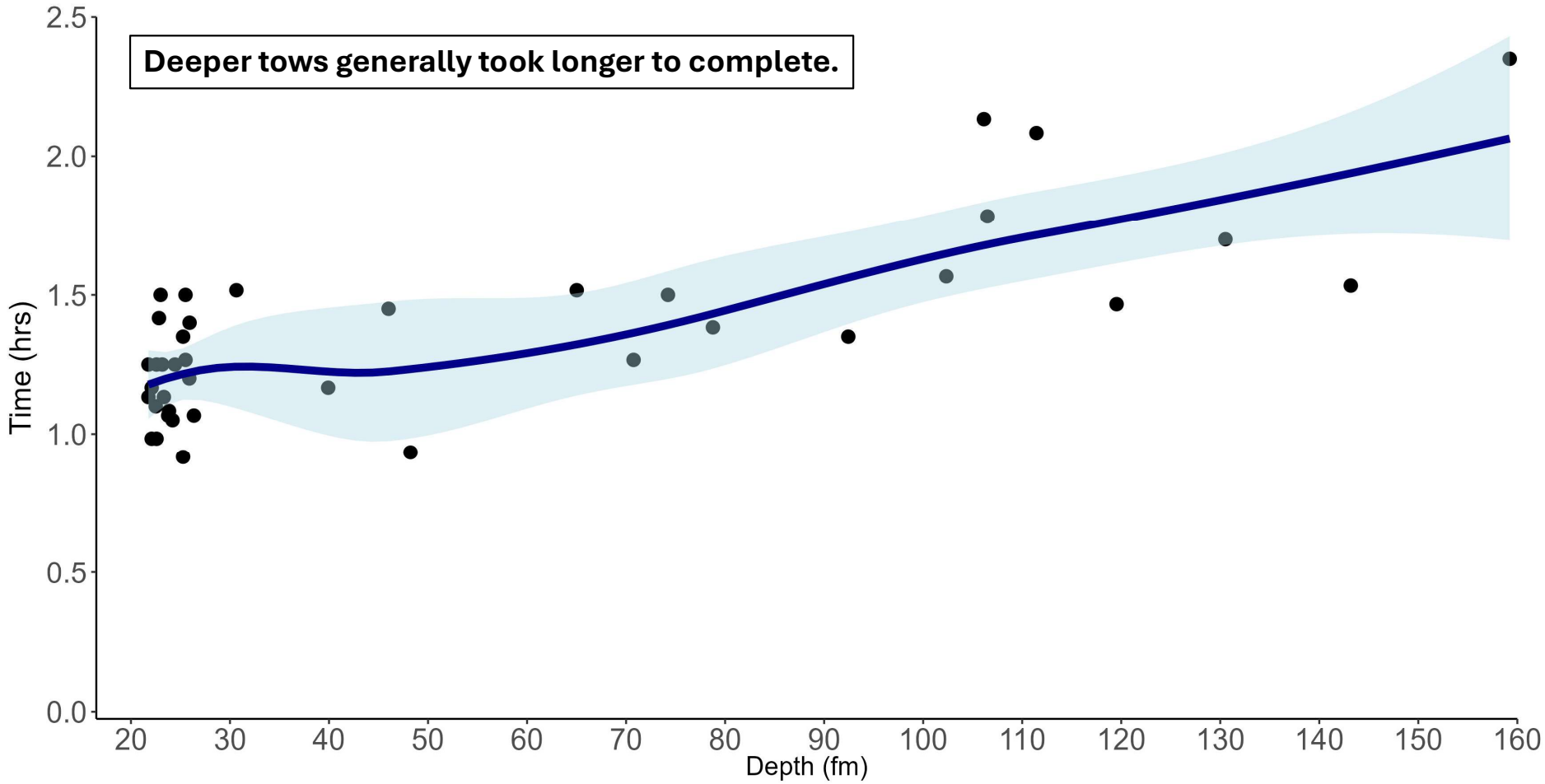
Obj. 3 – Time on Site, Wind Farm



Obj. 3 – Time on Site, Wind Farm

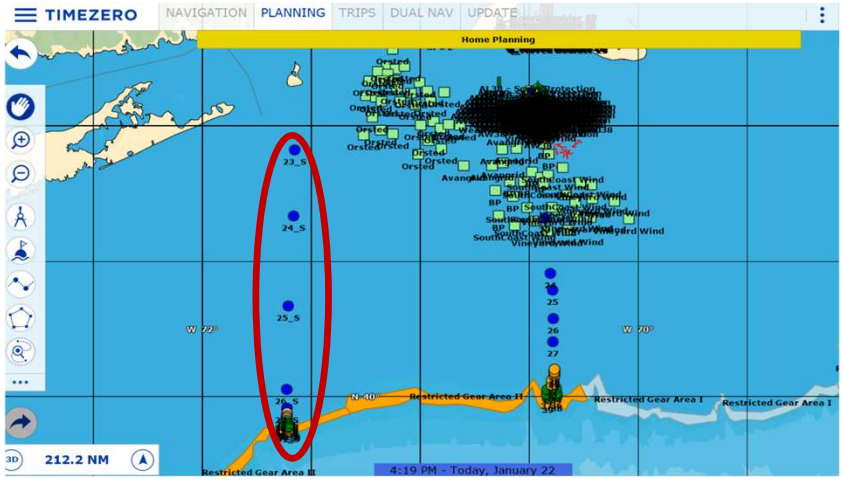


Obj. 3 – Time on Site vs Depth

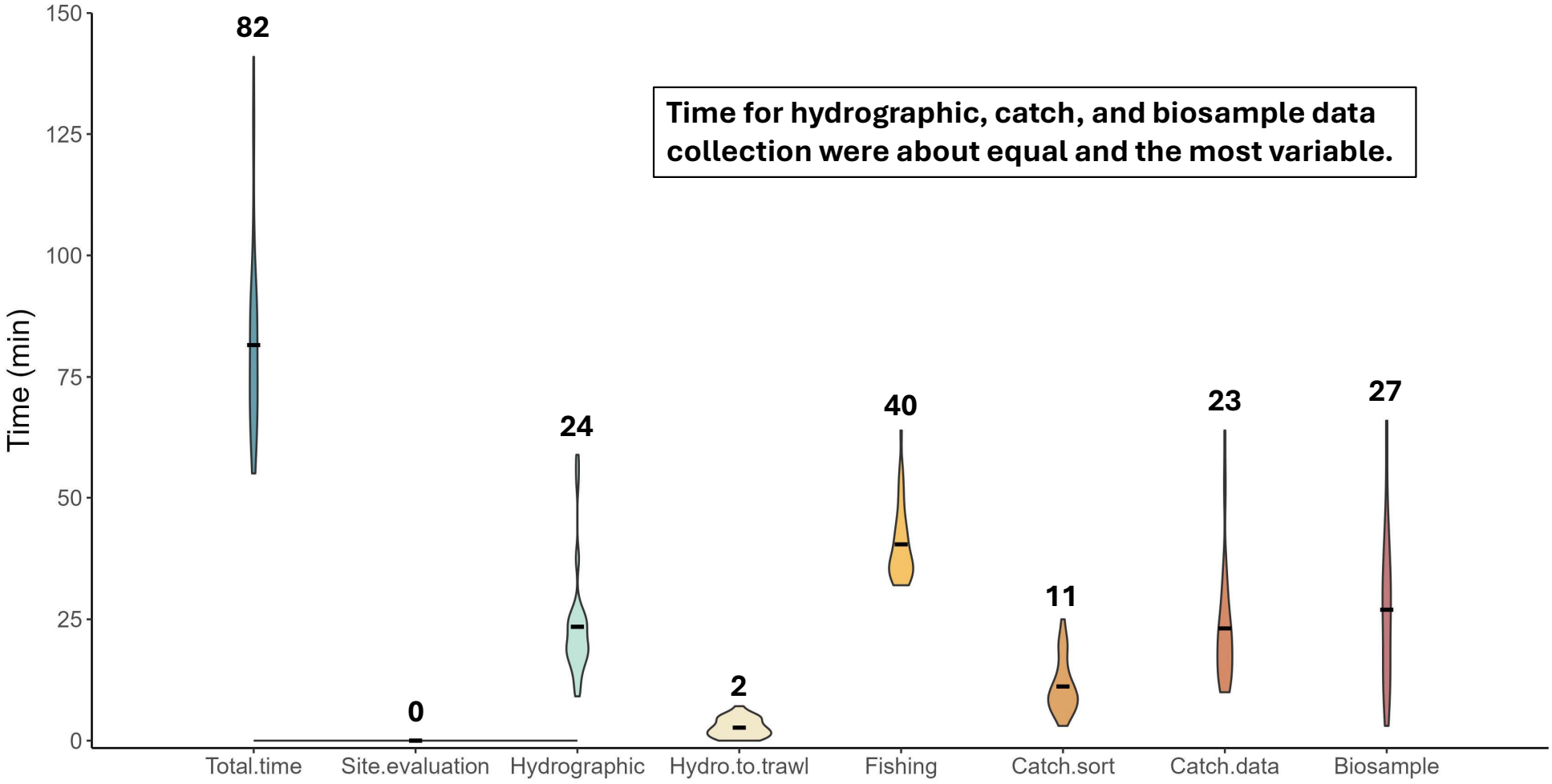


Obj. 3 – Transit vs Depth

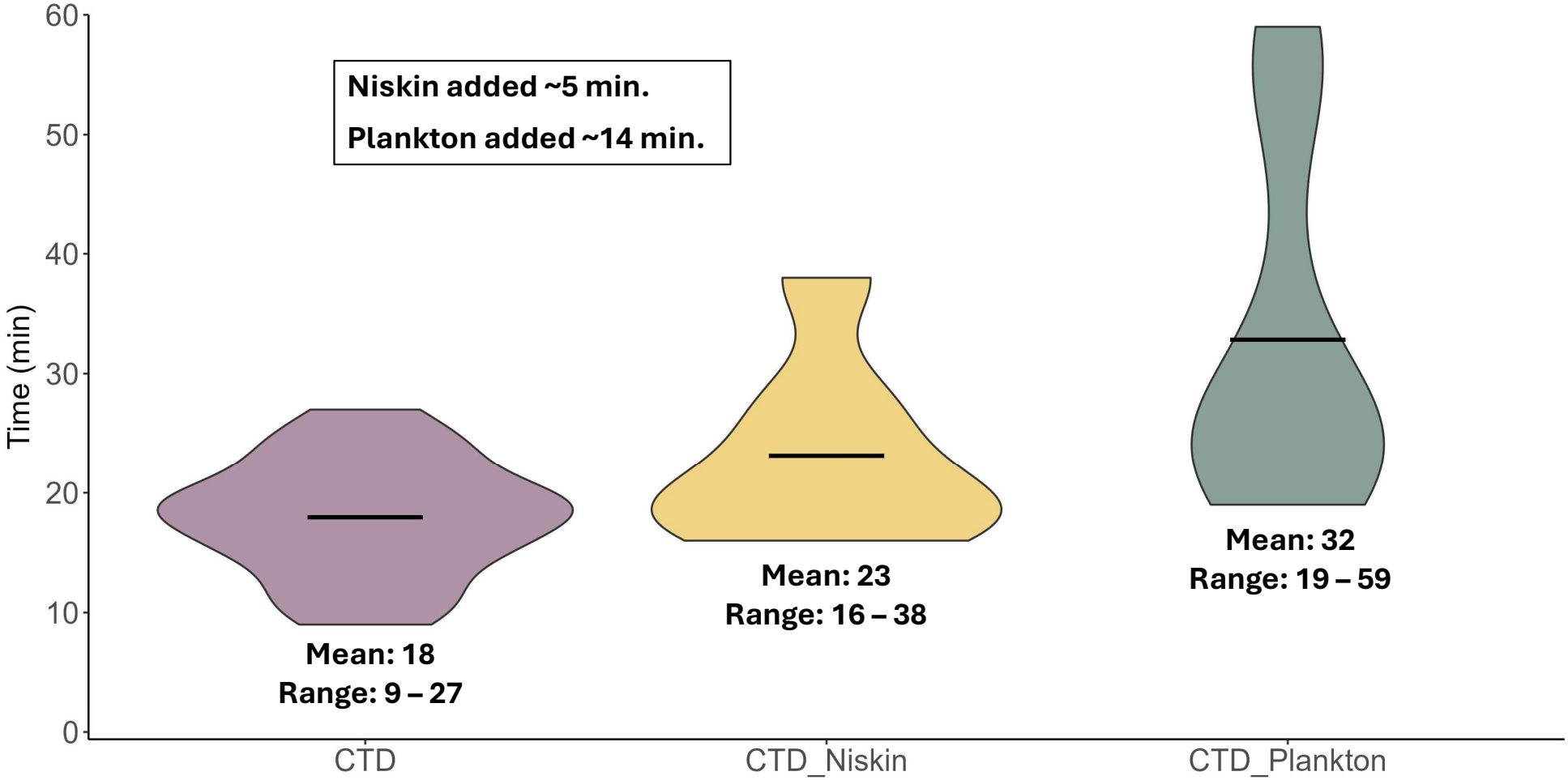
Mid-shelf tows had longer transits bc spread out.



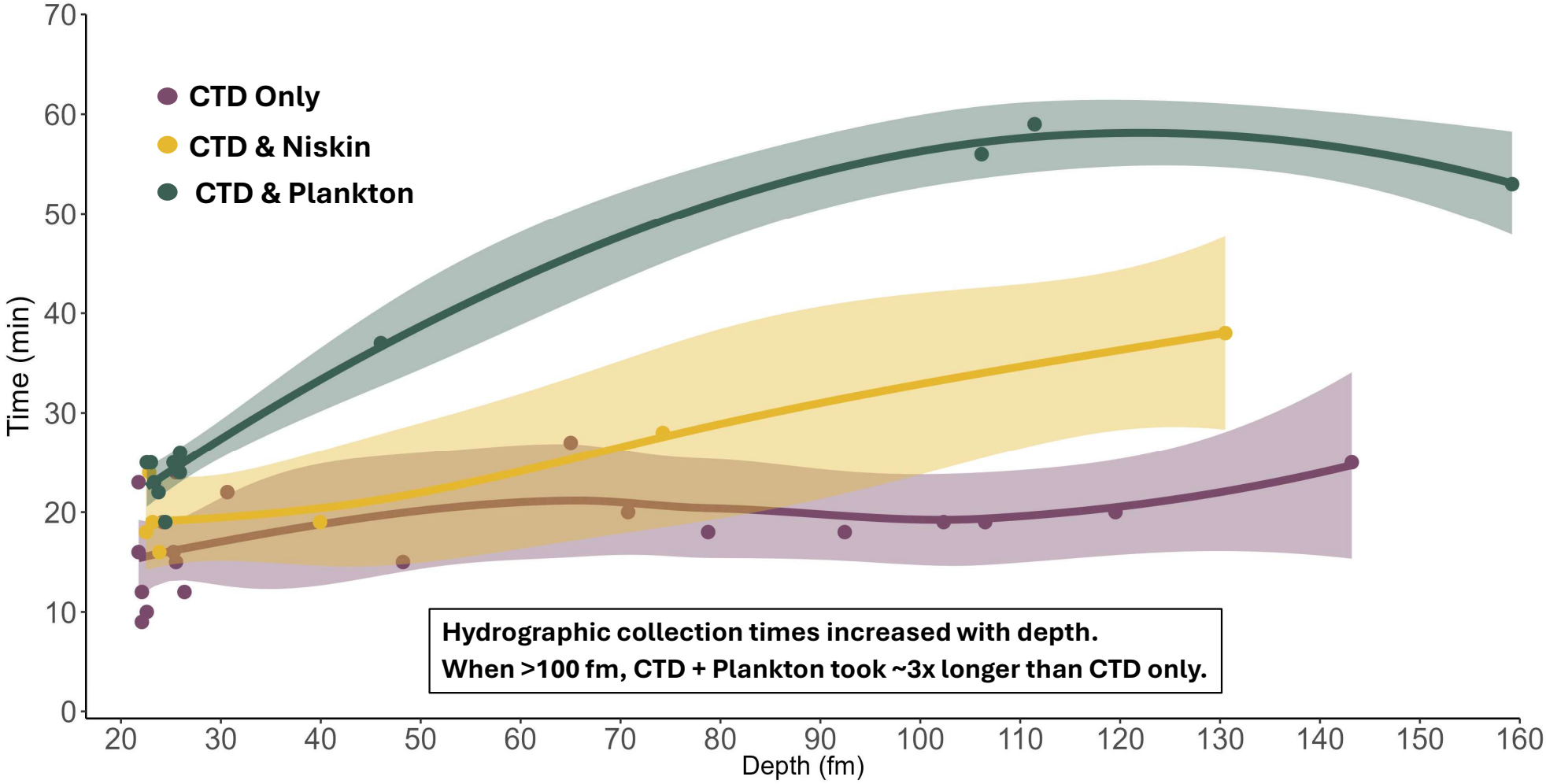
Obj. 3 – Time on Site Components



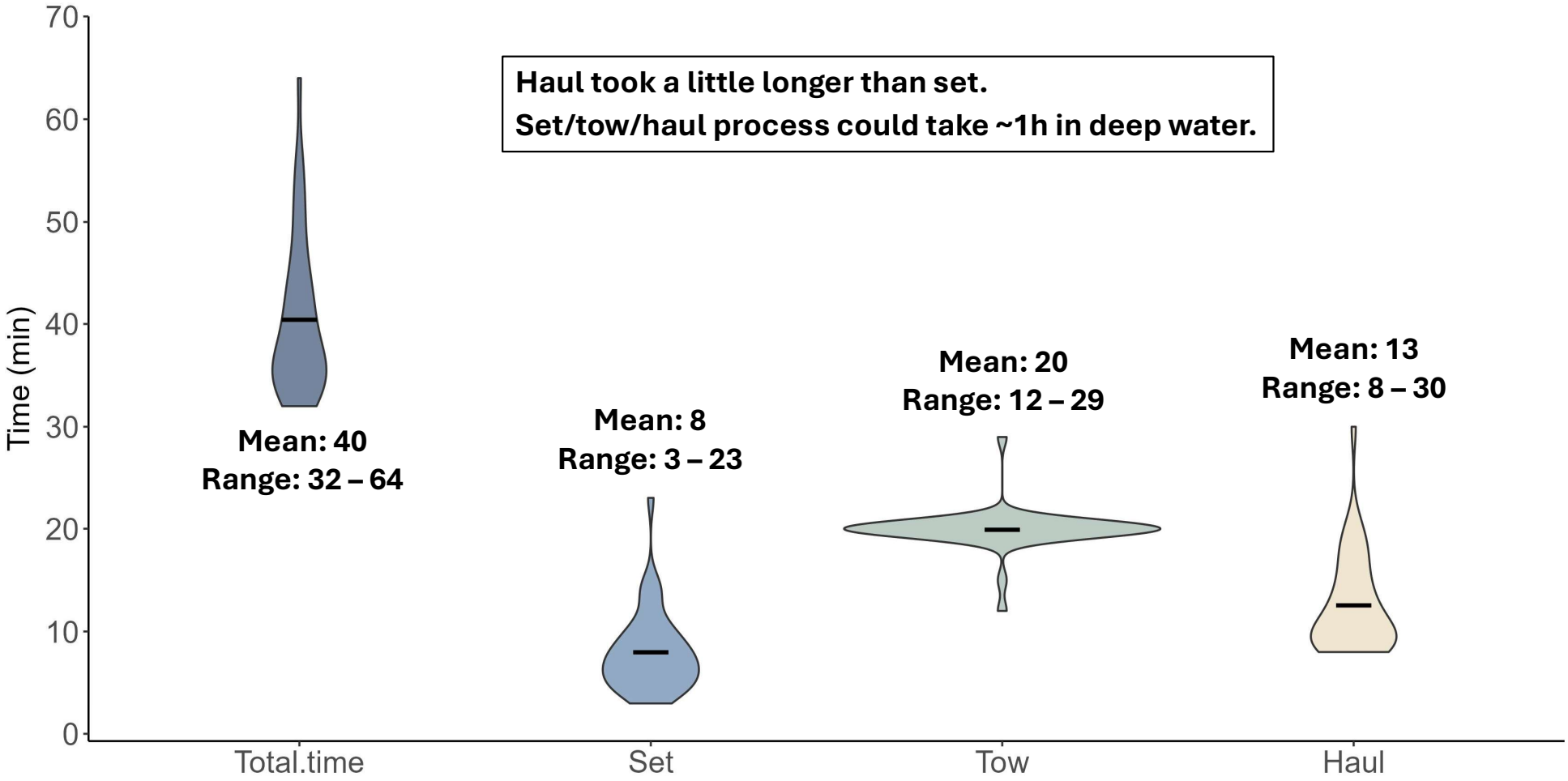
Obj. 3 – Hydrographic Time



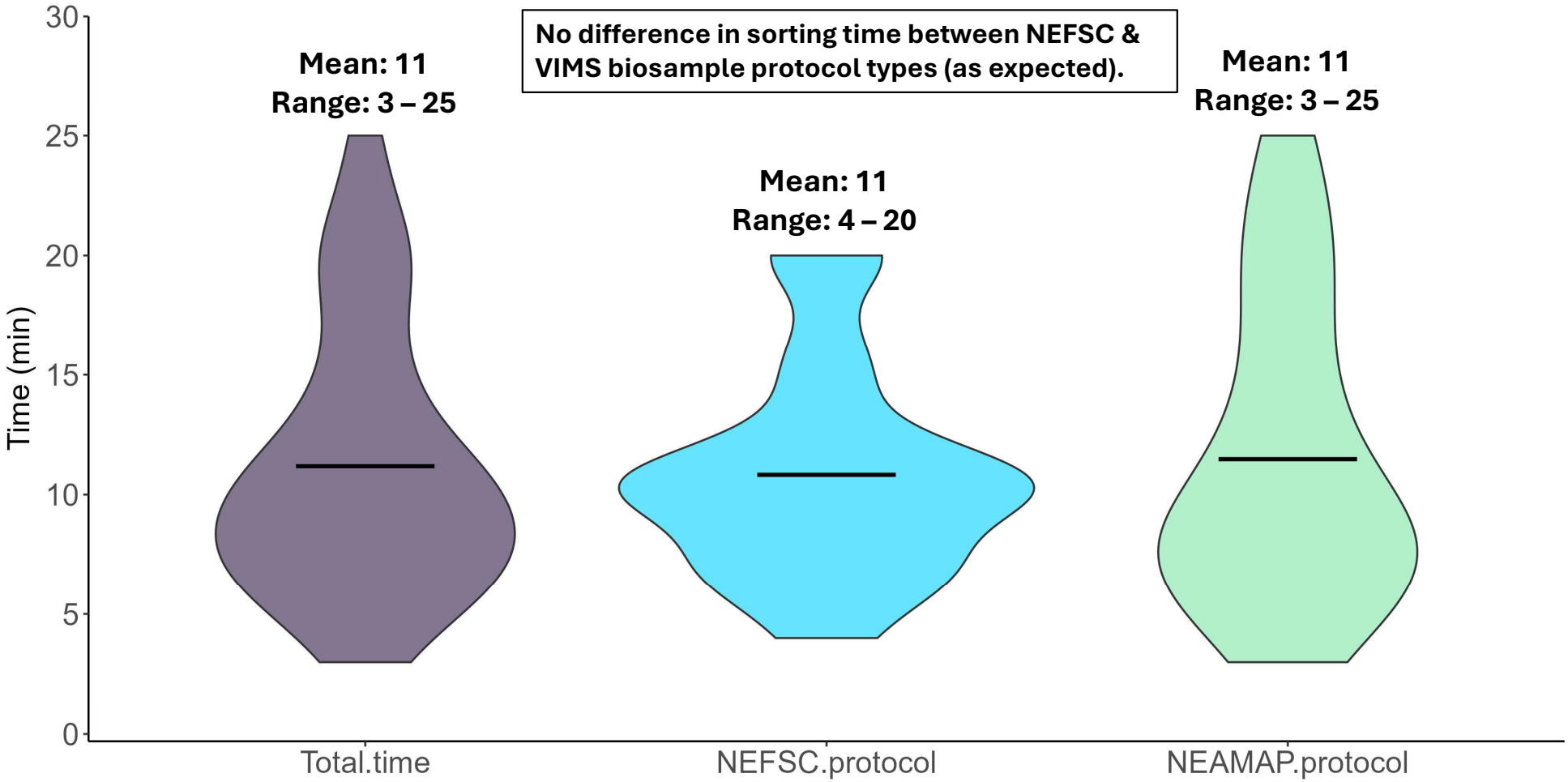
Obj. 3 – Hydrographic vs Depth



Obj. 3 – Fishing Time

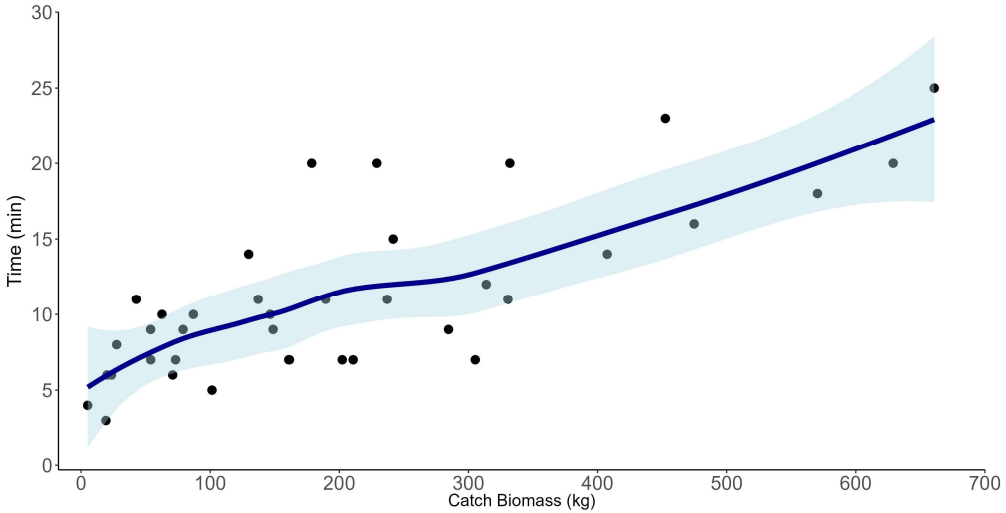


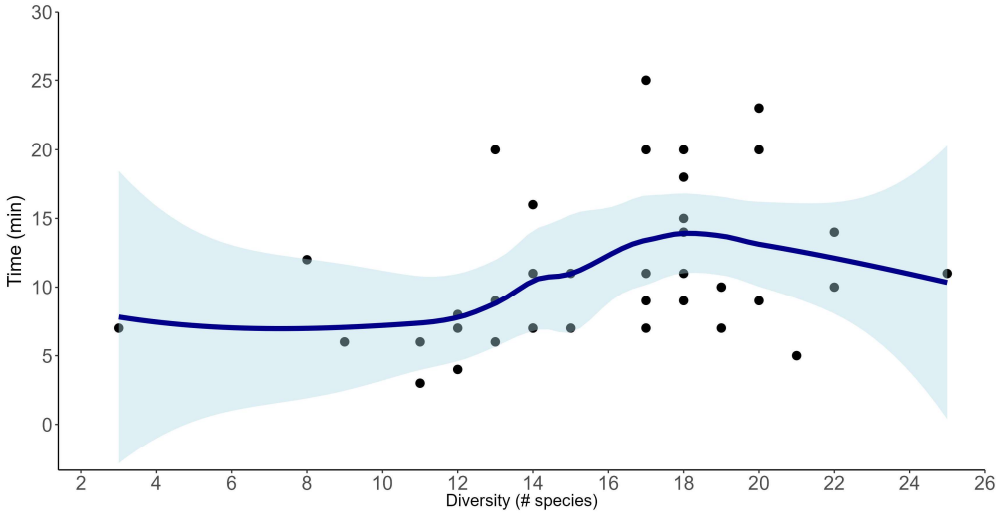
Obj. 3 – Catch Sorting Time



Obj. 3 – Catch Sorting Time

Sort times increased with catch biomass & generally increased with catch diversity.

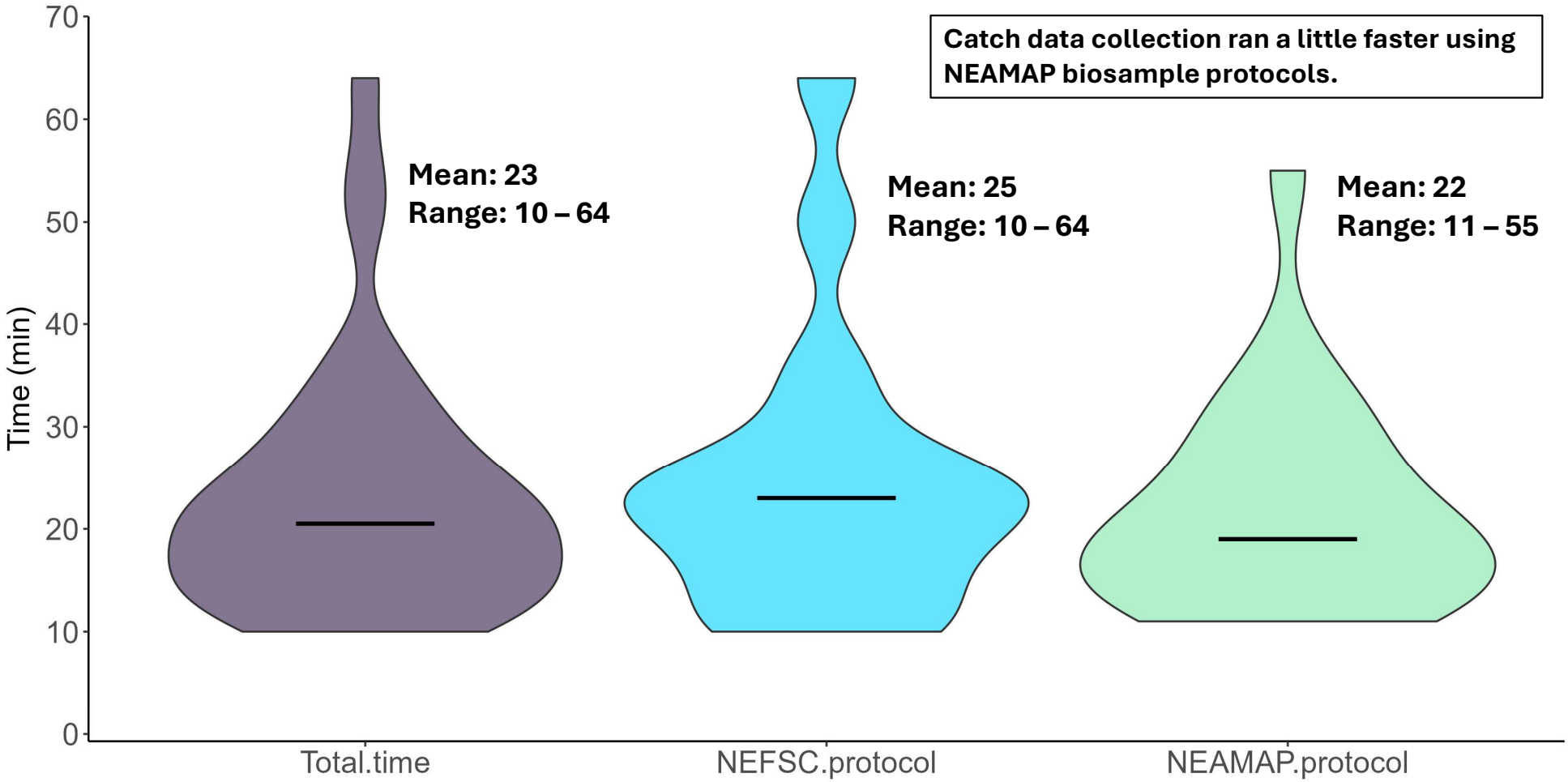




***subsampling rate – 35.9%**

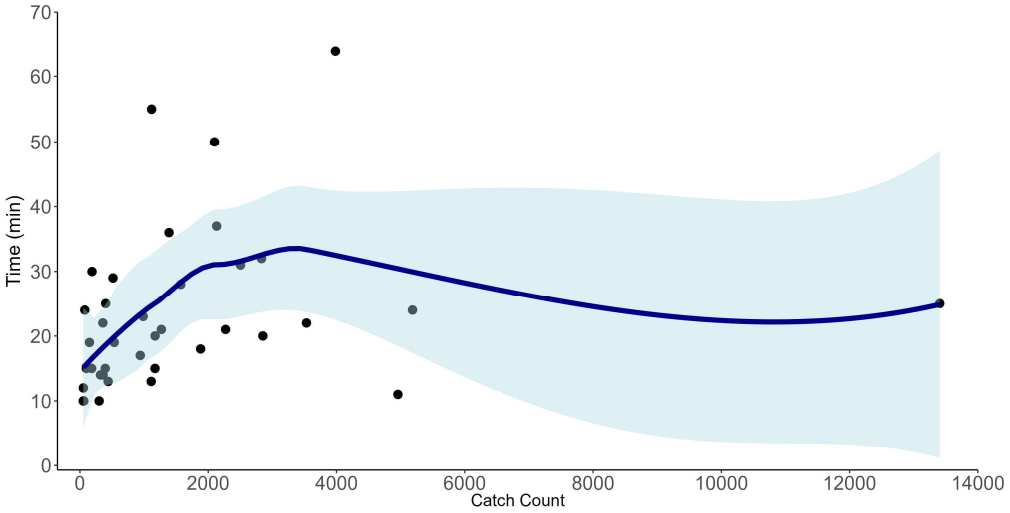
14 of 39 tows

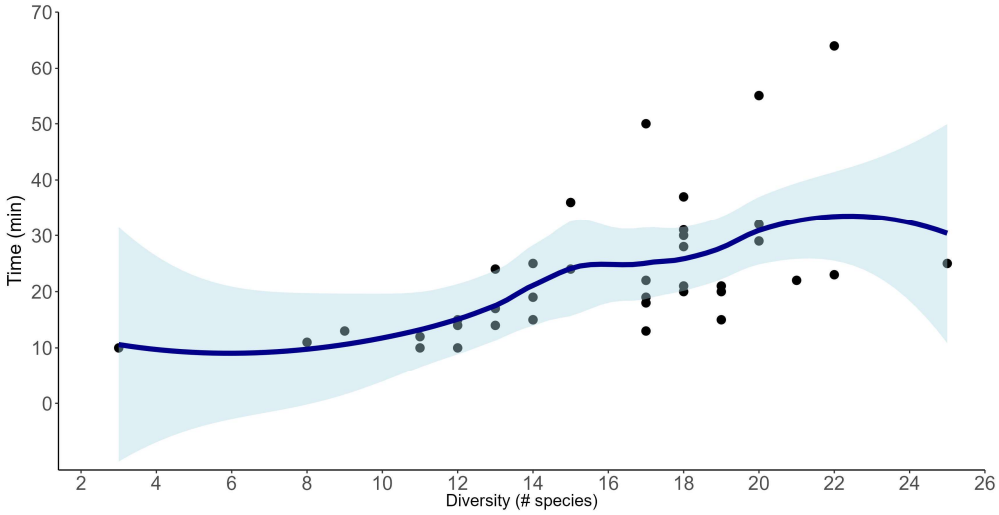
Obj. 3 – Catch Data Collection



Obj. 3 – Catch Data Collection

Catch data collection time generally increased with catch count & diversity.

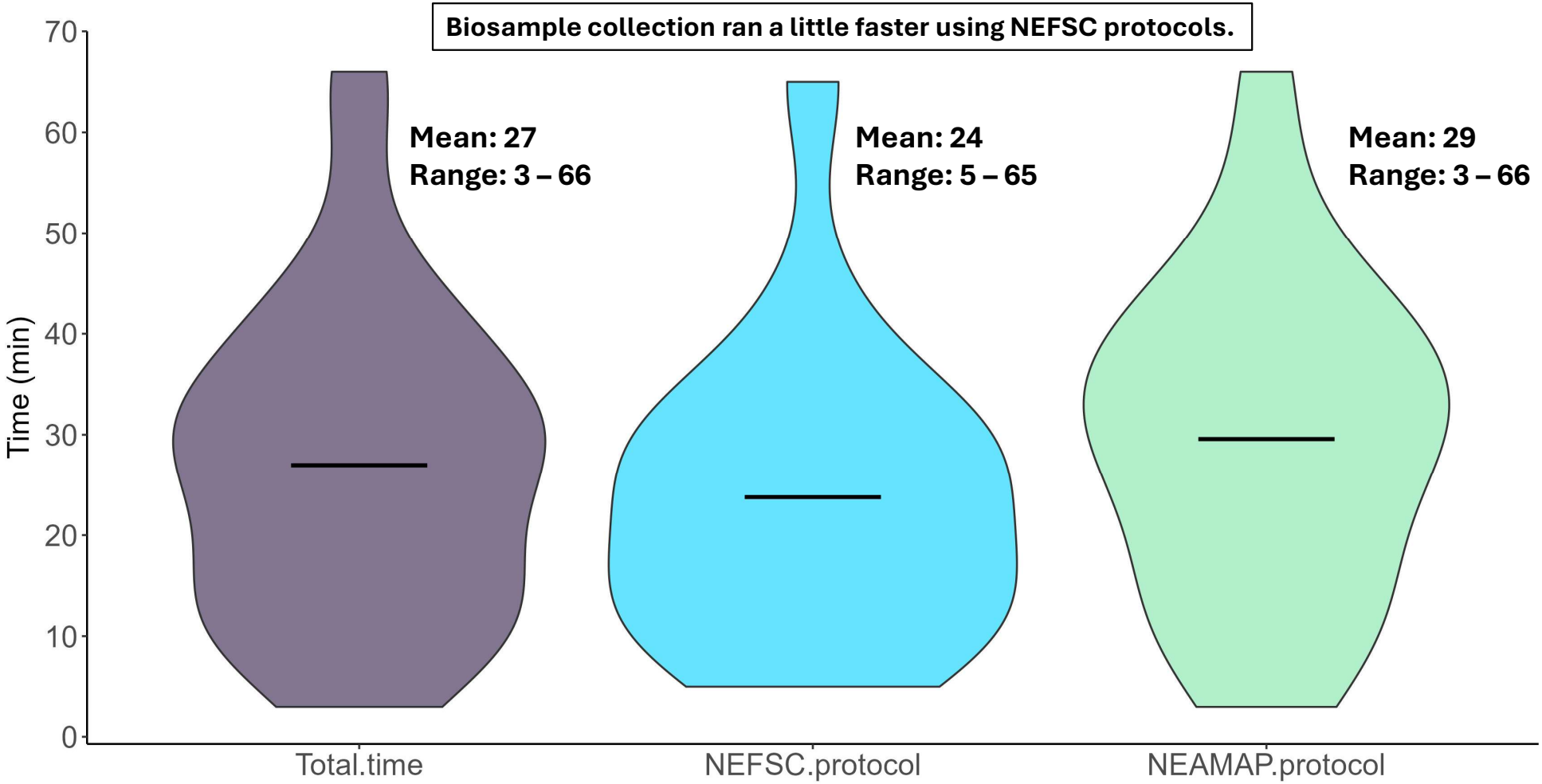




***subsampling rate – 35.9%**

14 of 39 tows

Obj. 3 – Biosample (Lab) Collection

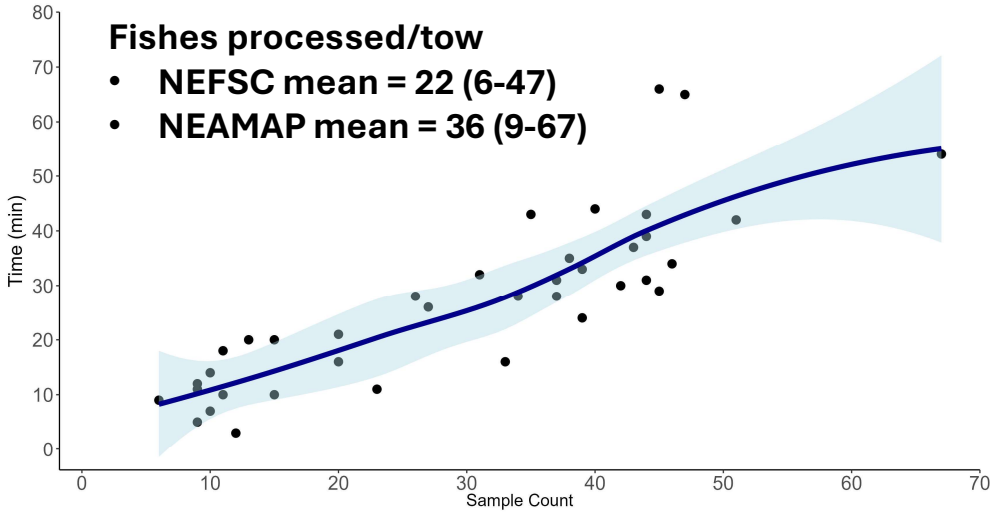


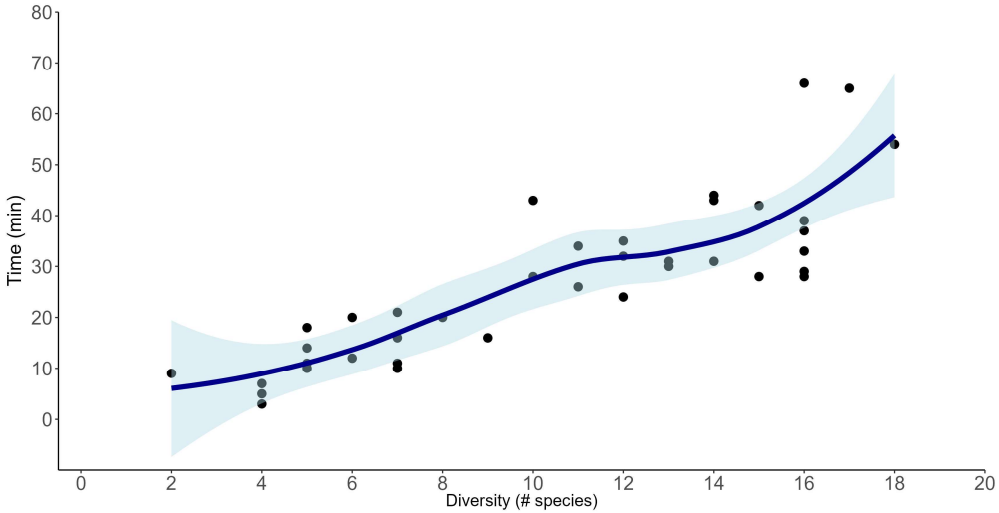
Obj. 3 – Biosample (Lab) Collection

Biosample collection time increased as more species and specimens were processed.

Fishes processed/tow

- **NEFSC mean = 22 (6-47)**
- **NEAMAP mean = 36 (9-67)**





Obj. 3 – Biosample Processing at VIMS

- **Stomach sample & age structure processing in progress.**
  - **1127 fishes sampled**

- **Half of stomach samples completed.**
  - **Currently ~11.5 min/sample**
  - **Processing rates increasing as becoming more familiar with offshore fauna.**

- **About half of ageing structures have been sectioned & are awaiting final age assignments.**
  - **Remaining species are primarily hakes & elasmobranchs.**

Obj. 3 – Lessons Learned & Recommendations

1. **Sampling efficiency was unaffected by wind turbines.**
2. **Day & night sampling rates were comparable.**
3. **Offshore sites took an average of 25 min longer than wind sites.**
   - Recommend using time-on-site vs depth relationship + distance between sites to estimate realistic sampling rates in future ops.
4. **Hydrographic collections added 24 min to time on site.**
   - Recommend retaining CTD/niskin/plankton collections.
   - Add real-time depth measurement (perhaps real-time CTD data?).
   - Identify sea-state cutoff for plankton tows.
5. **Data collection was equally efficient using NEFSC & NEAMAP protocols.**
   - Recommend picking one and retaining for future.
   - Note that both are currently used in assessments.
   - Likely need to modify FSCS. Catch & biosampling occur "in parallel" on industry boat.
6. **Overall, expect to average 6 – 7 sites per 14h day in Phase II.**

RIBTS Pilot – By the Numbers…

ODA

- Number tows = 22
- Number species = 43
- Catch count = 28,500
- Catch biomass = 5,706.3 kg
- Number measured = 7,622
- Number biosampled = 851 (25 spp.)

Species	Count	Biomass (kg)
Red hake	10,105	1,427.5
Silver hake	14,639	730.9
Spiny dogfish	384	506.2
Little skate	1,075	497.3
Winter skate	765	487.3
Northern searobin	535	117.3
Summer flounder	44	28
Fourspot flounder	105	22.5
Barndoor skate	20	22.1
Atlantic mackerel	96	22.1

Offshore

- Number tows = 17
- Number species = 54
- Catch count = 34,359
- Catch biomass = 2,149.0 kg
- Number measured = 7,357
- Number biosampled = 276 (21 spp.)

Species	Count	Biomass (kg)
butterfish	25,686	1,354.2
spiny dogfish	350	290.9
silver hake	3,184	220.3
longfin inshore squid	2,896	96.6
northern shortfin squid	729	30.8
winter skate	8	18.6
goosefish	8	18.0
smooth dogfish	7	15.3
barndoor skate	6	13.0
red hake	62	12.7


Thank you!