

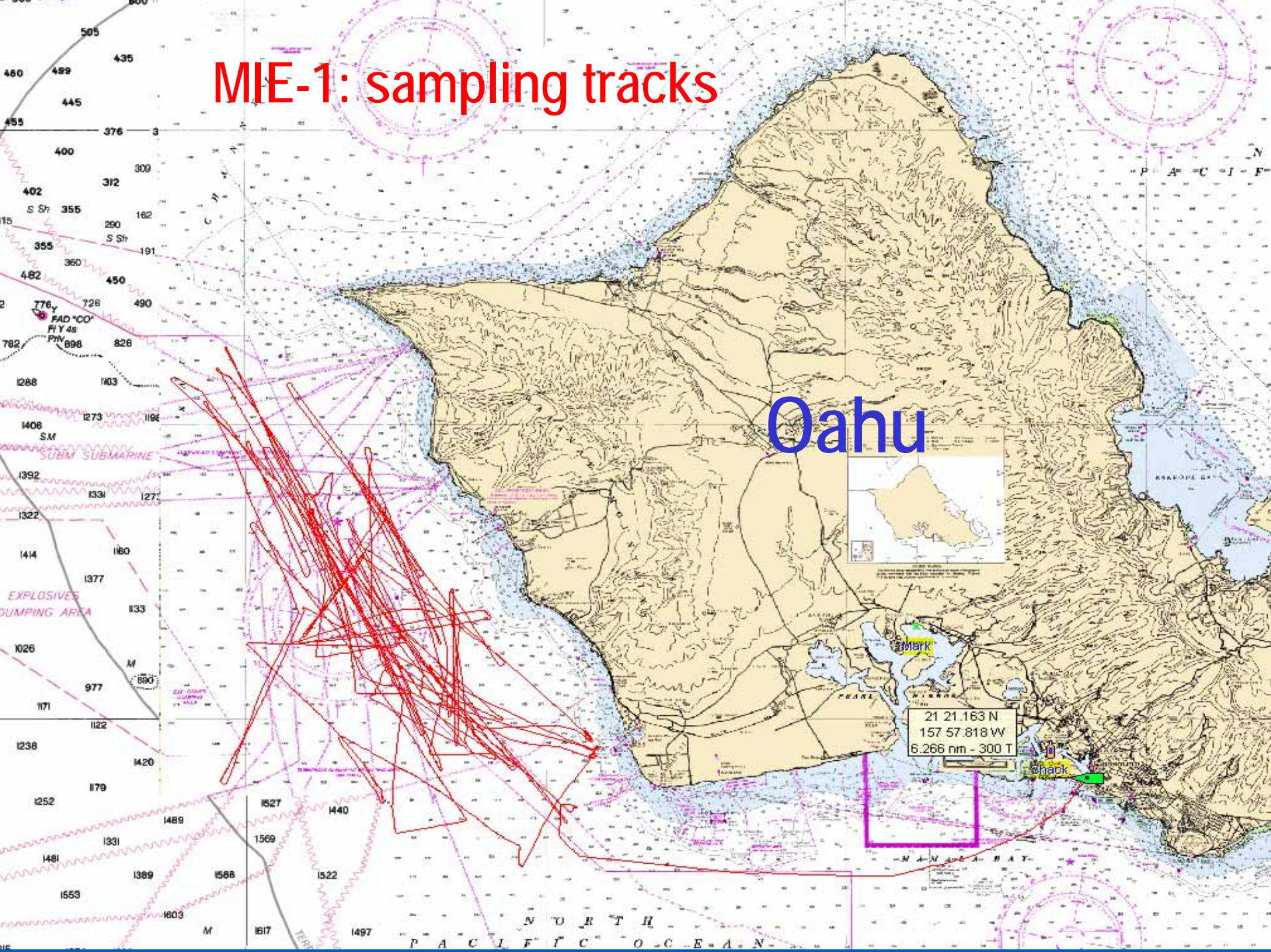


Inter-comparison of three
sampling gears during the first
Micronekton Intercalibration
Experiment (MIE-1): size
composition approach

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16th Annual Meeting
Victoria, Canada

MJE-1: sampling tracks



MIE-1: NOAA ship *Oscar Elton Sette* cruise 04-13



Home Port: **Honolulu, Hawaii**
Length (LOA): **68.3 m (224 ft)**
Breadth (moulded): **13.1 m (43 ft.)**
Draft, Maximum: **4.6 m (15 ft.)**
Displacement: **2,301 tons**
Gross Tonnage: **2,014**
Net Tonnage: **604**
Speed & Endurance

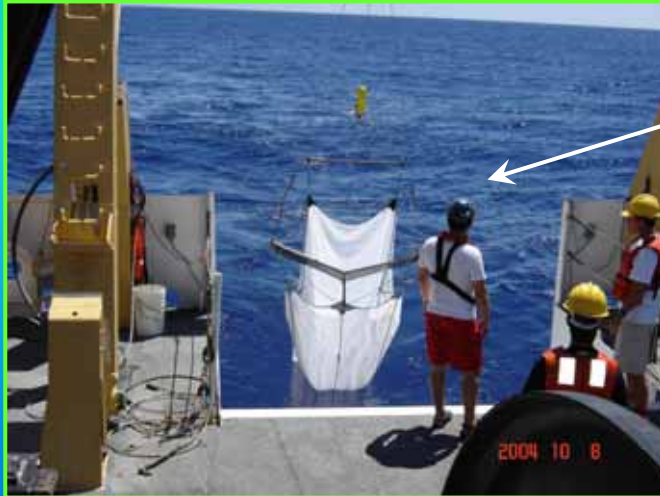
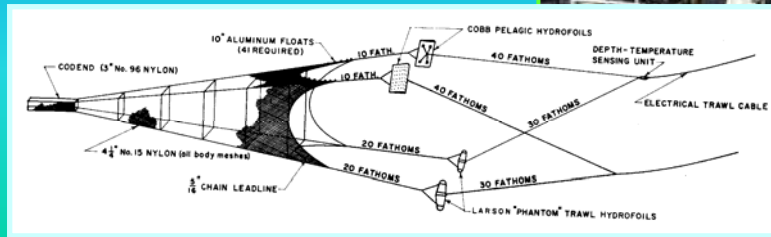


Cruising Speed: **10.5 knots**
Range: **5,500 nm**
Endurance: **30 days**
Endurance Constraint: **Stability**

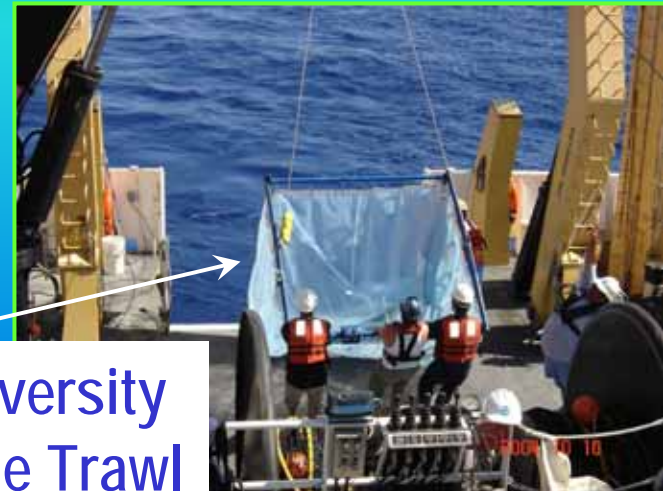
Cruise dates: **6-13 October 2004**
Sampling location: **Honolulu, Hawaii**

Sampling gears

140 m² "Stauffer modified"
pelagic Cobb trawl



1.8 m IKMT



2 m Hokkaido University
Rectangular Frame Trawl

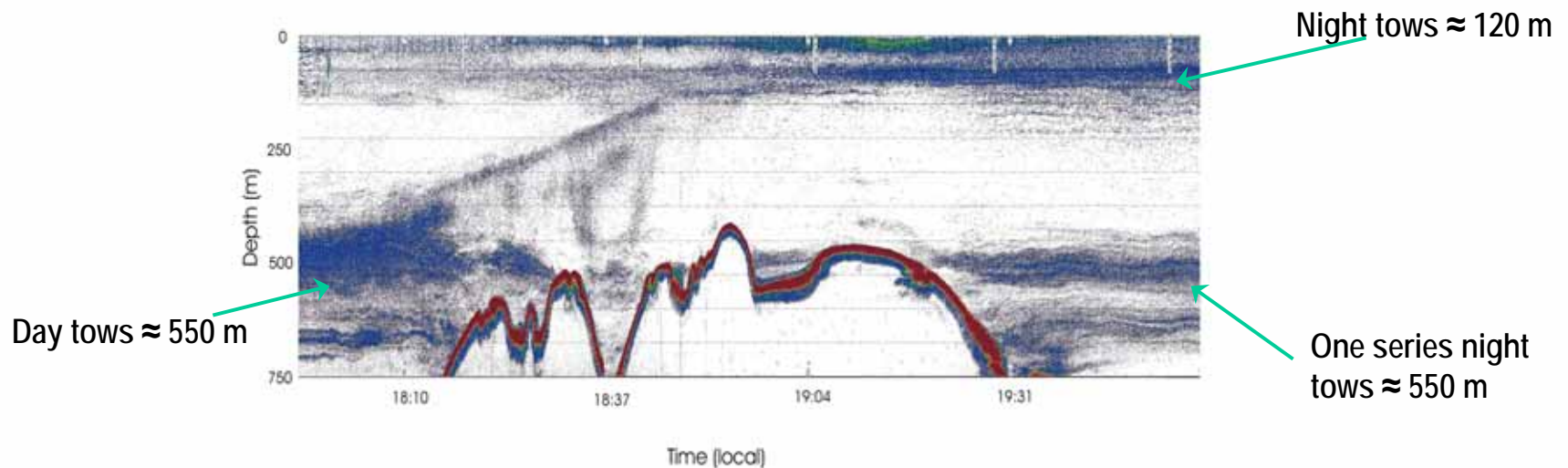
Sampling:

- 17 Cobb trawls
- 19 IKMTs
- 20 HU-RFTs

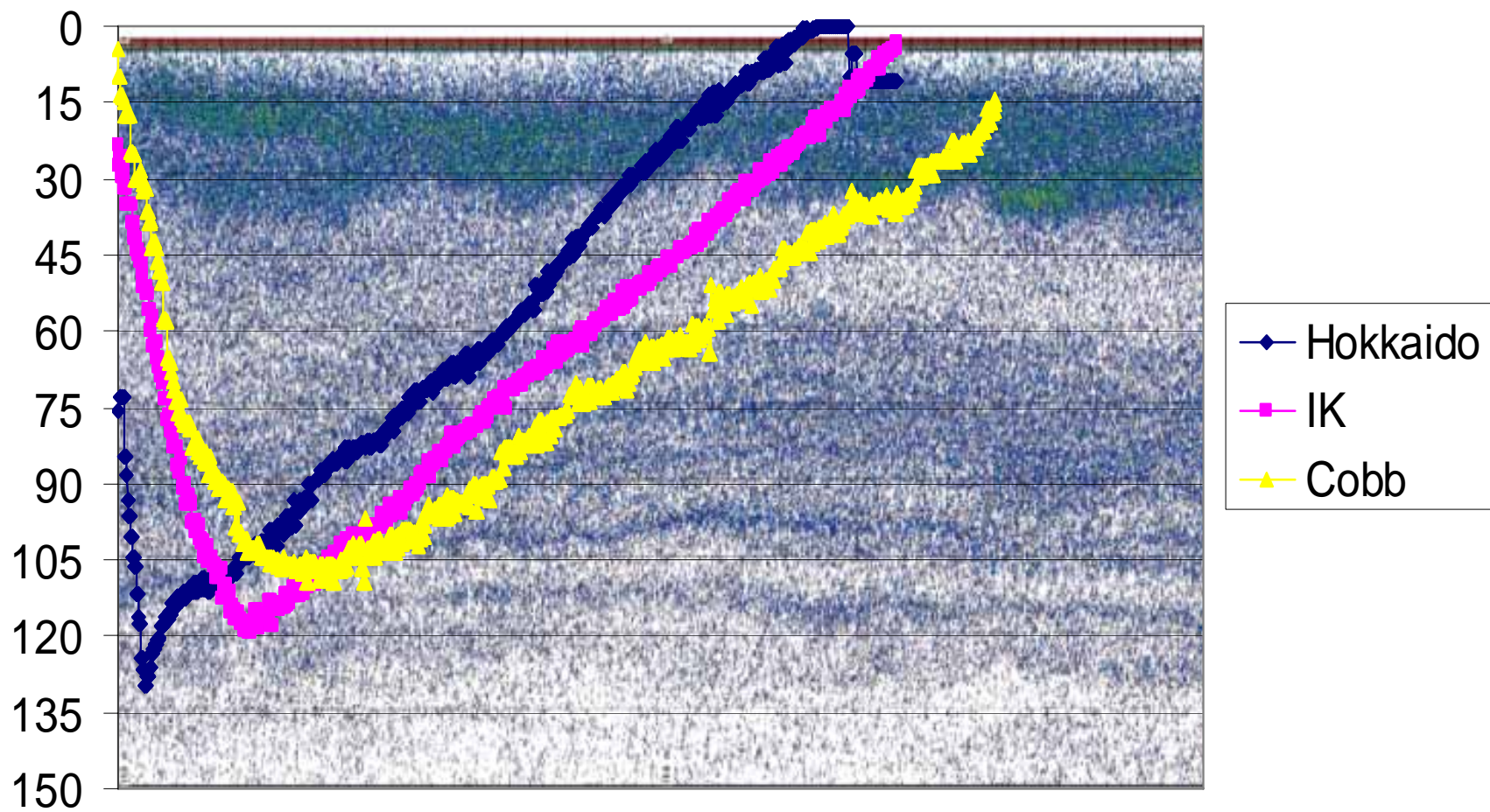
Sampling distribution for MIE-I, 6-13 October 2004							
	Wednesday 6 October	Thursday 7 October	Friday 8 October	Saturday 9 October	Sunday 10 October	Monday 11 October	Tuesday 12 October
00:00			IKMT (z _{max} = 120 m)		Hokudai RFT (z _{max} = 120 m)		
00:30				IKMT (2x) (z _{max} = 120 m)			IKMT (2x) (z _{max} = 120m)
01:00		Hokudai RFT (2x, z _{max} = 120m)					
02:00							
02:30							
03:00			Cobb Trawl (2x) (z _{max} = 120m)		Cobb Trawl (2x) (z _{max} = 120m)	Cobb Trawl (z _{max} = 550 m)	
03:30				Hokudai RFT (2x, z _{max} = 120m)			
04:00							Hokudai RFT (2x, z _{max} = 120m)
04:30							
05:00		IKMT (2x) (z _{max} = 120 m)					
05:30							
06:00							
06:30							
07:00							
07:30			Hokudai RFT (z _{max} = 550 m)				Hokudai RFT (z _{max} = 550 m)
08:00							
08:30		Cobb Trawl (z _{max} = 250m)					
09:00				Cobb Trawl (2x) (z _{max} = 550m)	IKMT (2x) (z _{max} = 550 m)		
09:30							
10:00							
10:30							
11:00						Hokudai RFT (z _{max} = 550 m)	Cobb Trawl (z _{max} = 550 m)
11:30		Cobb Trawl (2x) (z _{max} = 550m)					
12:00							
12:30			IKMT (2x) (z _{max} = 550 m)				
13:00							
13:30						Hokudai RFT (z _{max} = 550 m)	IKMT (z _{max} =550 m)
14:00					Hokudai RFT (z _{max} = 550 m)		
14:30							
15:00							
15:30							
16:00					Cobb Trawl (z _{max} = 550 m)	IKMT (z _{max} = 550m)	
16:30							
17:00				Hokudai RFT (z _{max} =550 m)			
17:30							
18:00							
18:30							
19:00							
19:30							IKMT (z _{max} =550 m)
20:00		Hokudai RFT (3x, z _{max} = 120m)		IKMT (2x) (z _{max} = 120m)		Hokudai RFT (2x, z _{max} = 120m)	
20:30							
21:00			Cobb Trawl (2x) (z _{max} = 120m)		Cobb Trawl (z _{max} = 550 m)		
21:30	Cobb Trawl (2x) (z _{max} = 120m)						
22:00							Hokudai RFT (z _{max} = 550 m)
22:30				Hokudai RFT (2x, z _{max} = 120m)		IKMT (2x) (z _{max} = 120m)	
23:00		IKMT (z _{max} = 120 m)			Cobb Trawl (z _{max} = 550 m)		
23:30							
00:00							

EK-60 38 kHz echogram

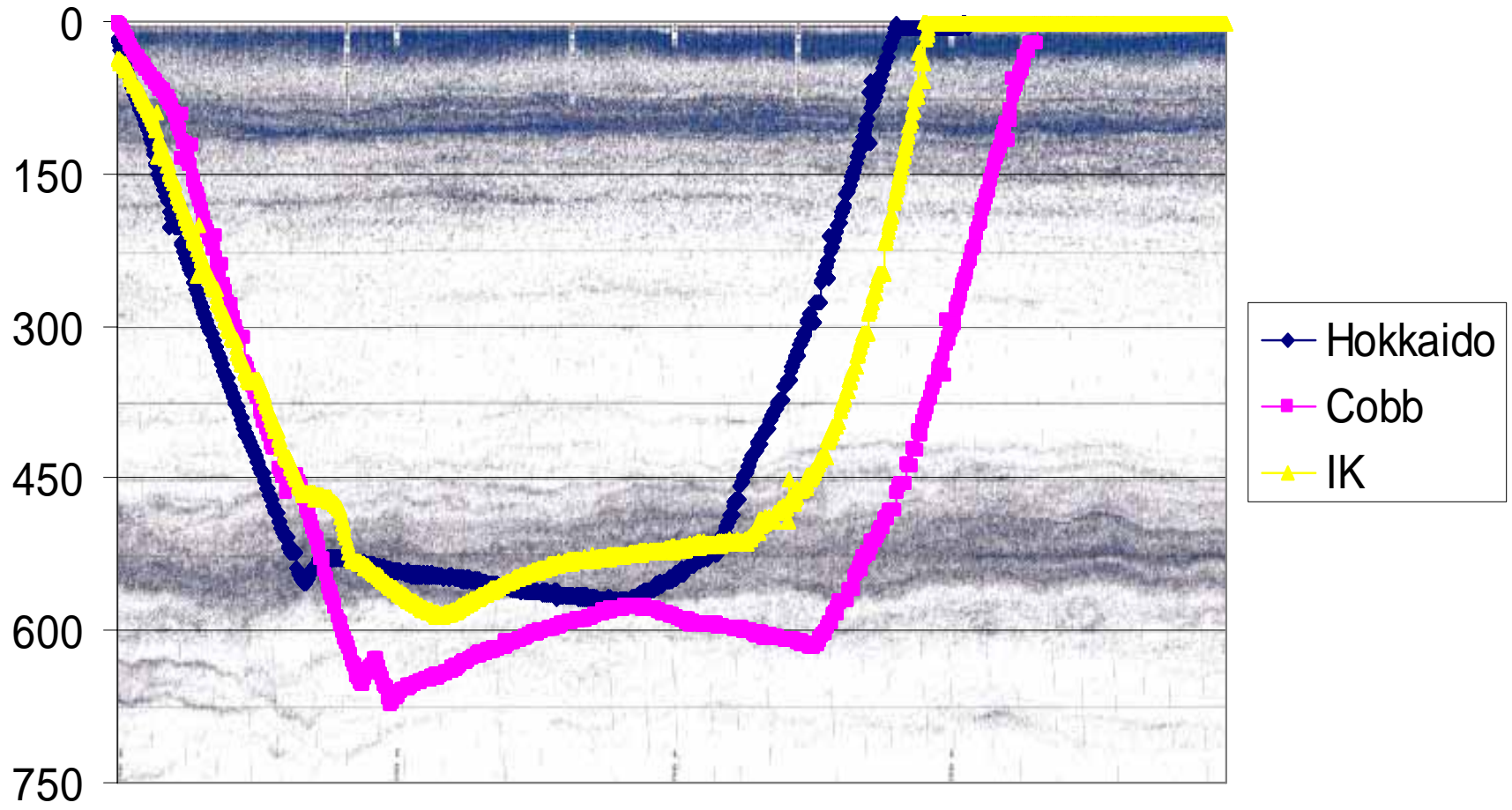
October 9, 2004



Nighttime Oblique Tows (1hr)



Daytime Horizontal Tows (1hr at depth)



Hokkaido Net



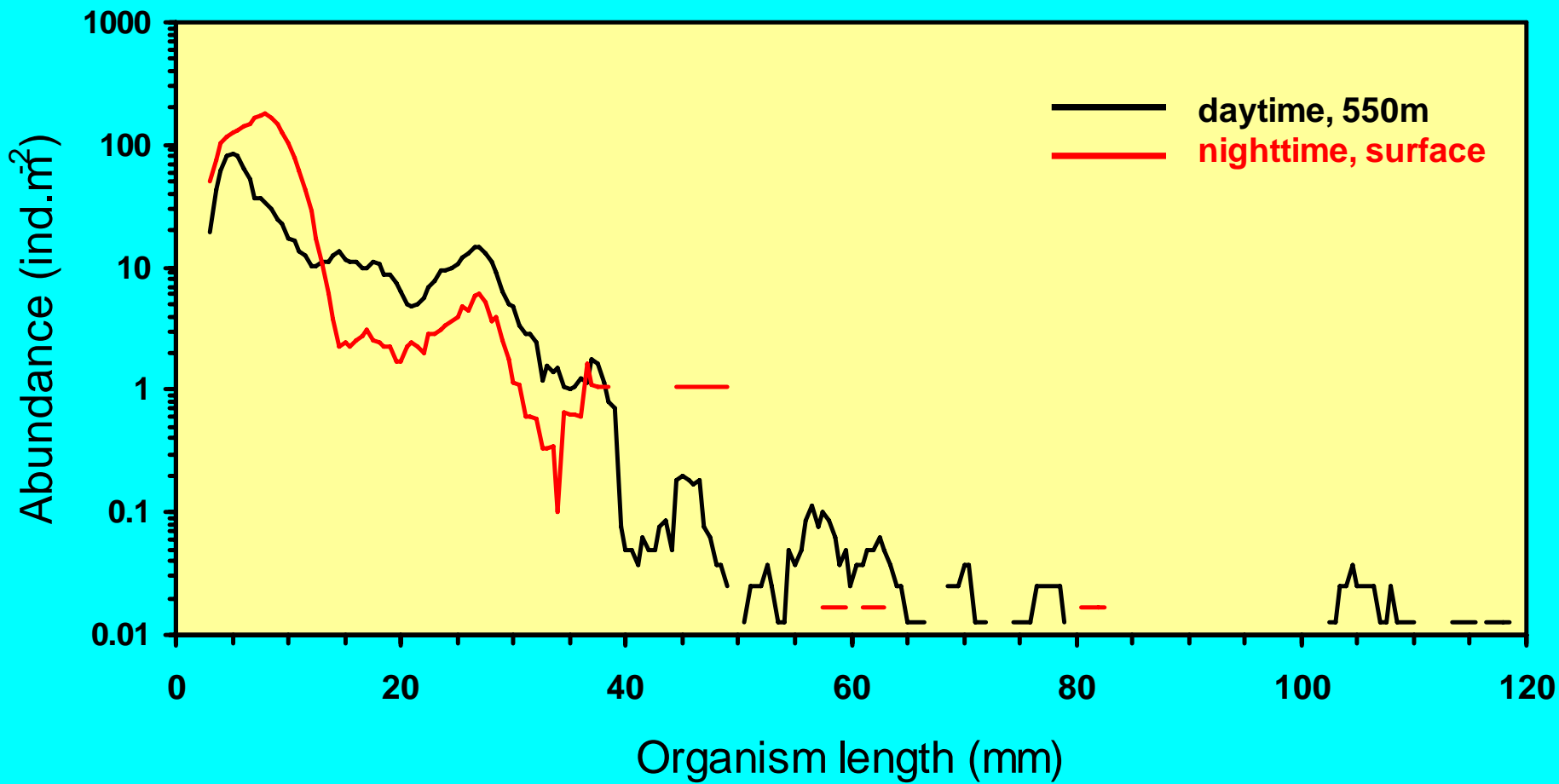
Cobb trawl



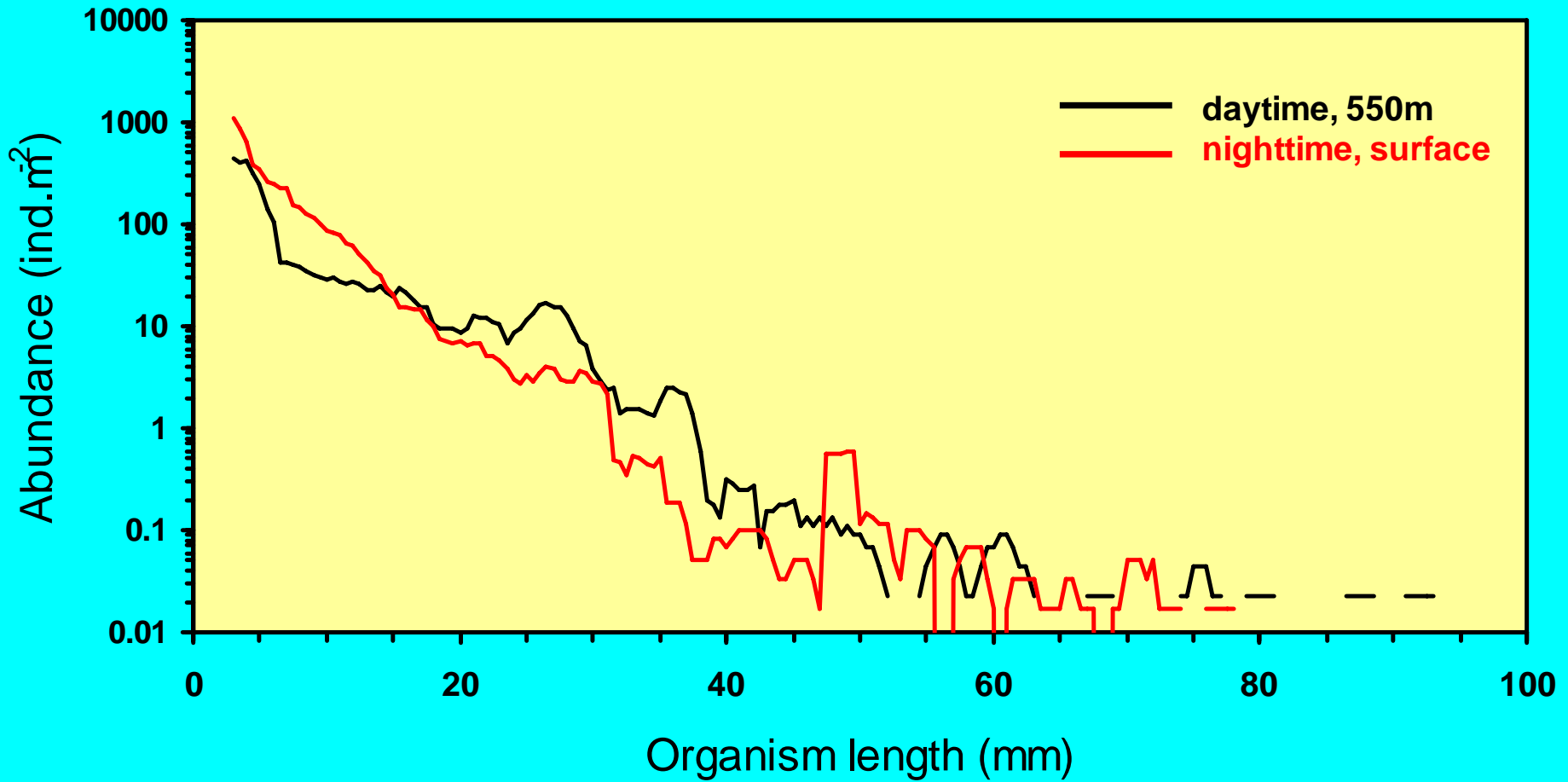
Isaacs-Kidd Trawl



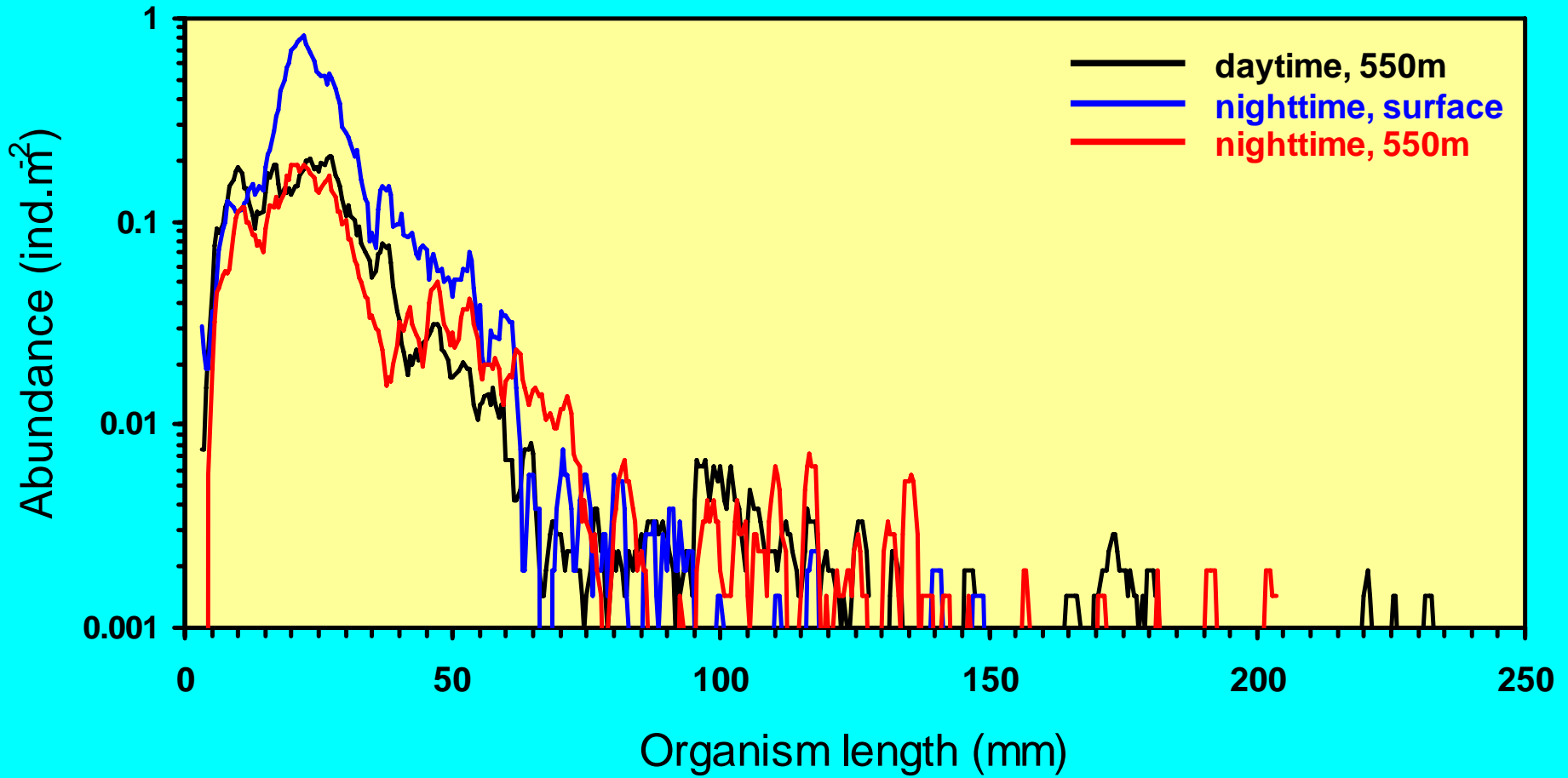
Hokkaido Net



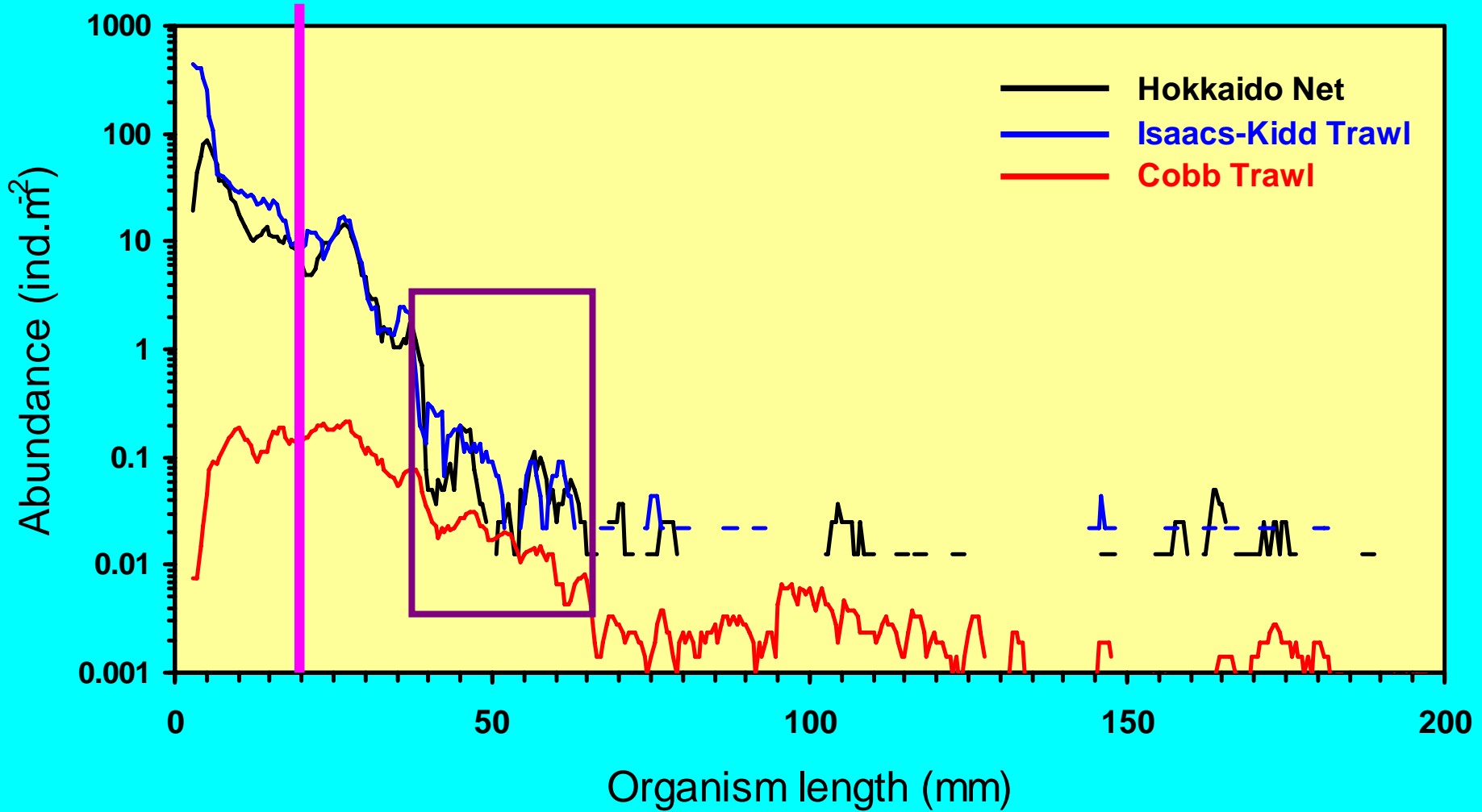
Isaacs Kidd Midwater Trawl



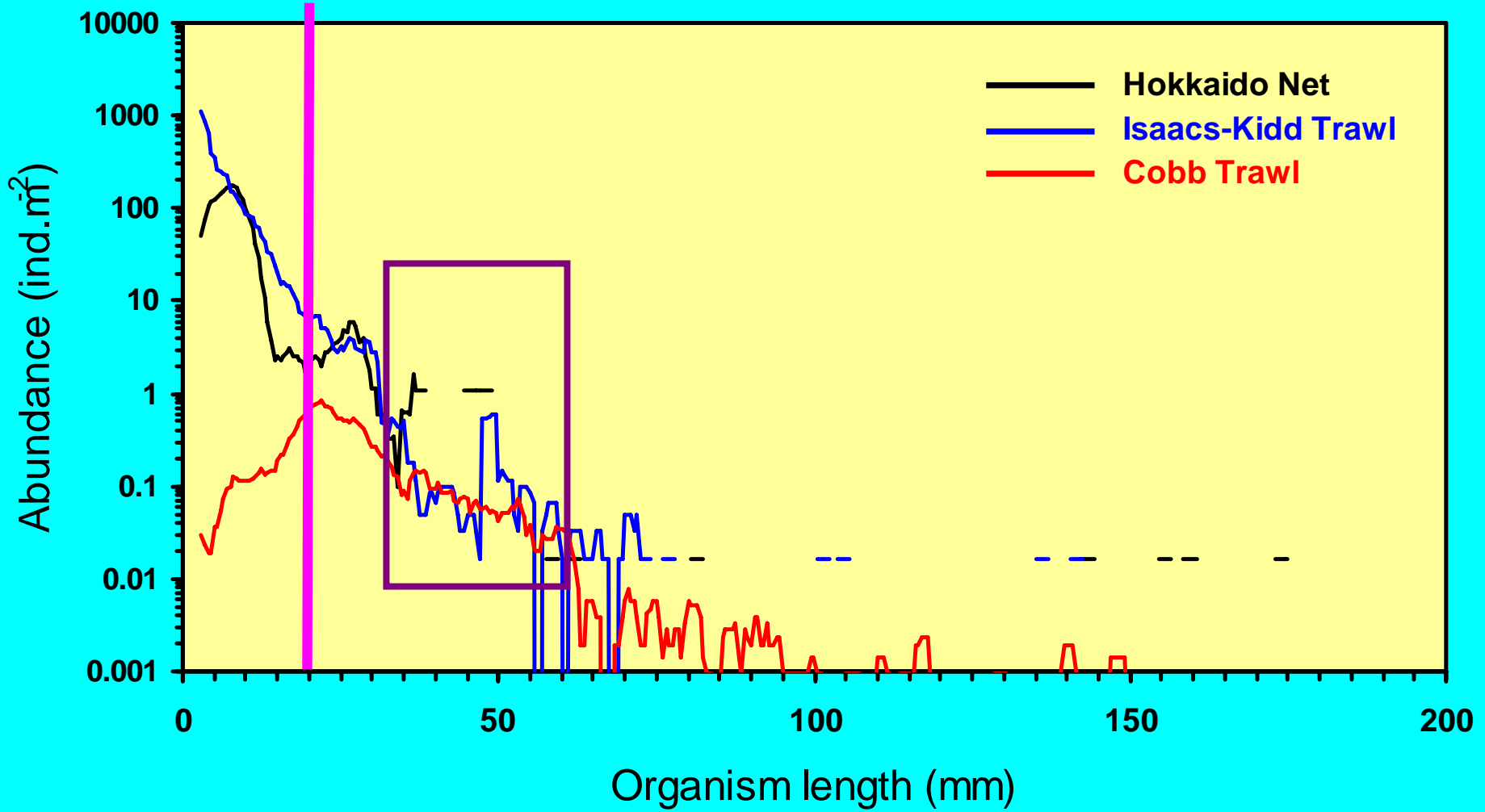
Cobb Trawl



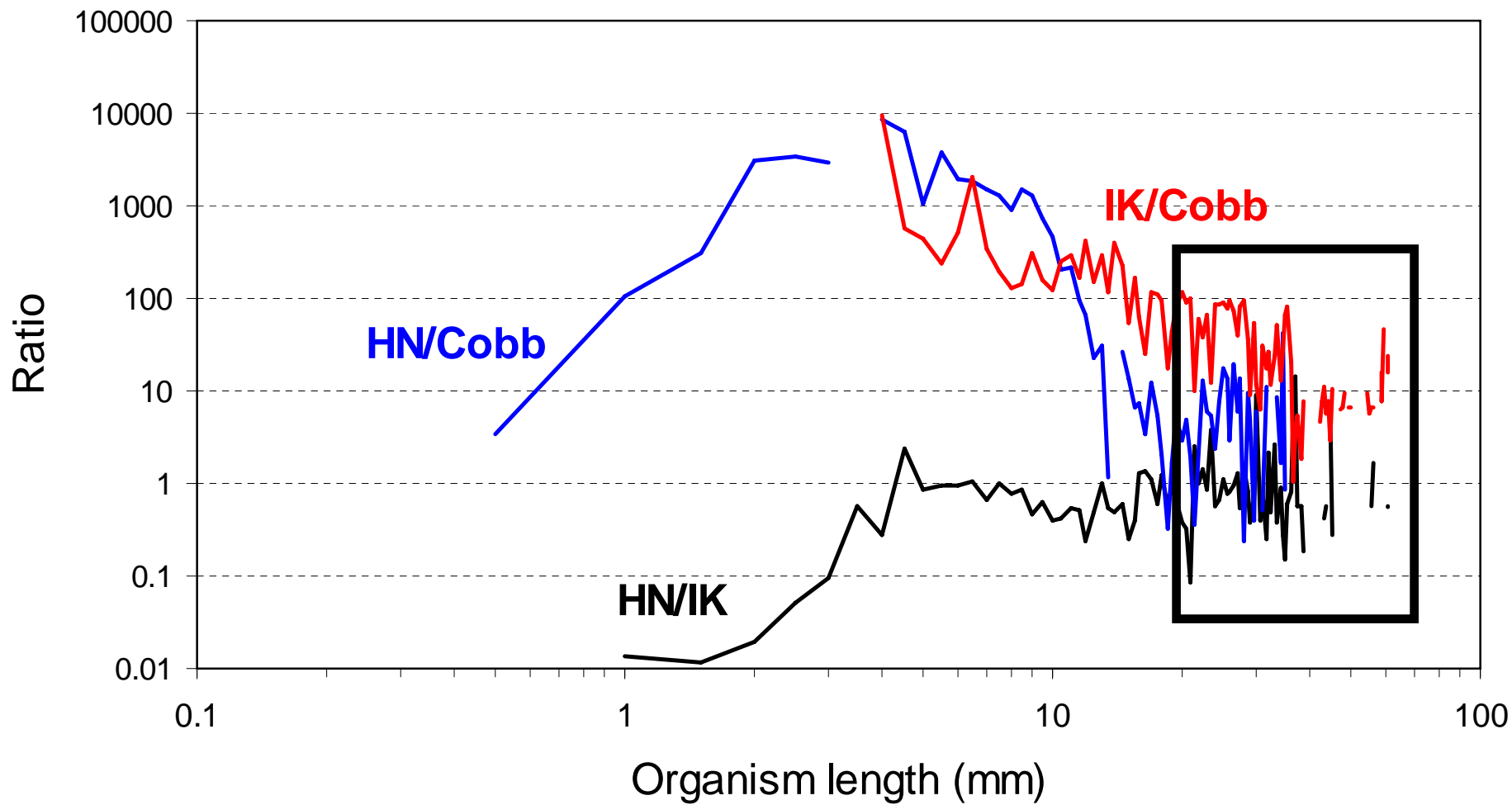
Daytime



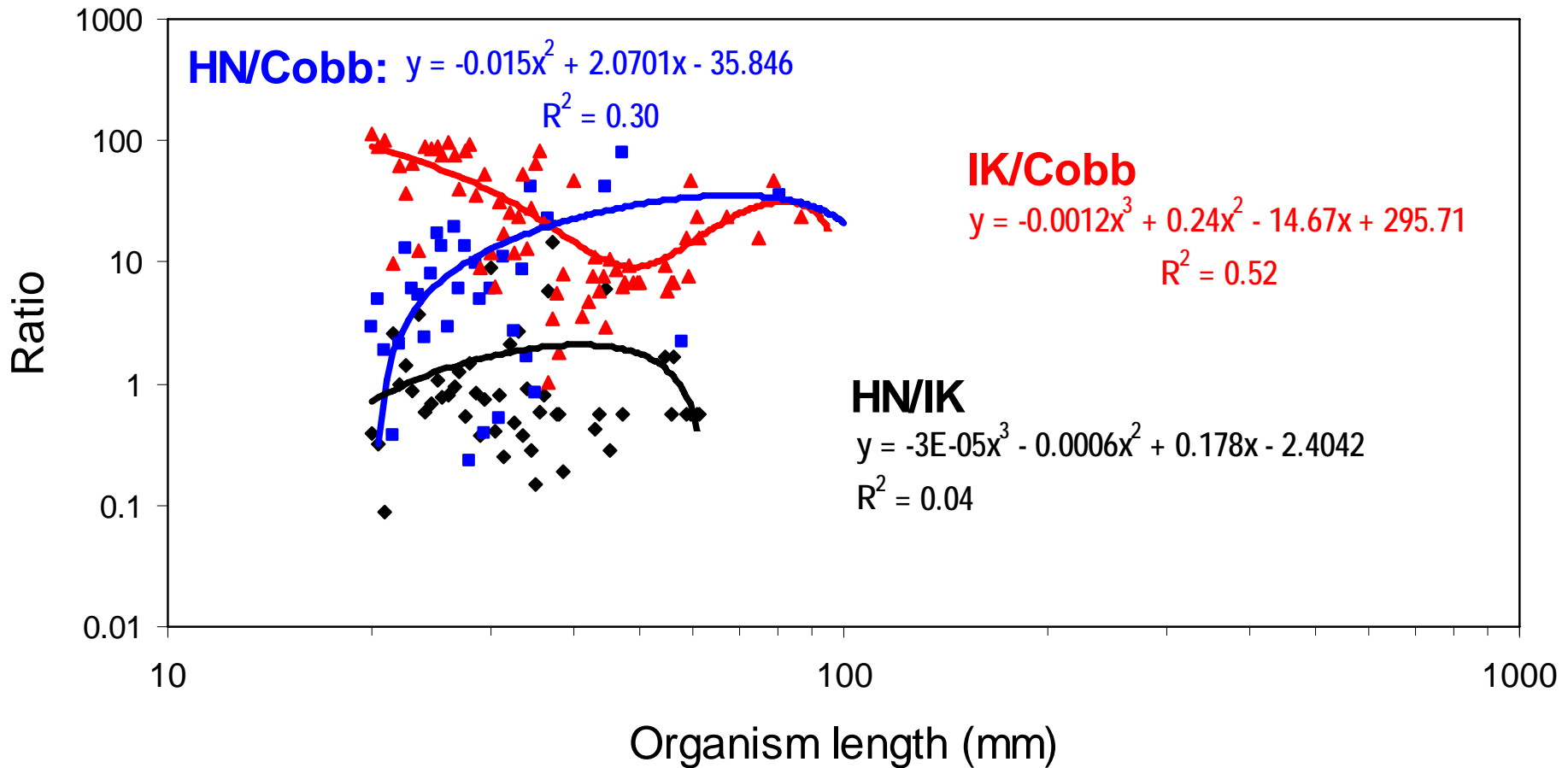
Nighttime



Daytime



Daytime



Mean ratios of the whole catch between different sampling gears: daytime sampling

Organism length, mm	HN-IK		HN-Cobb		IK-Cobb	
	mean	SD	mean	SD	mean	SD
< 20	0.7	0.5	311	595	945	2766
20-100	1.5	2.5	27.2	28.4	31.7	31.9
>100	0.6	0.1	23.0	6.1	40.8	11.7

Mean ratios of the whole catch between different sampling gears: daytime sampling

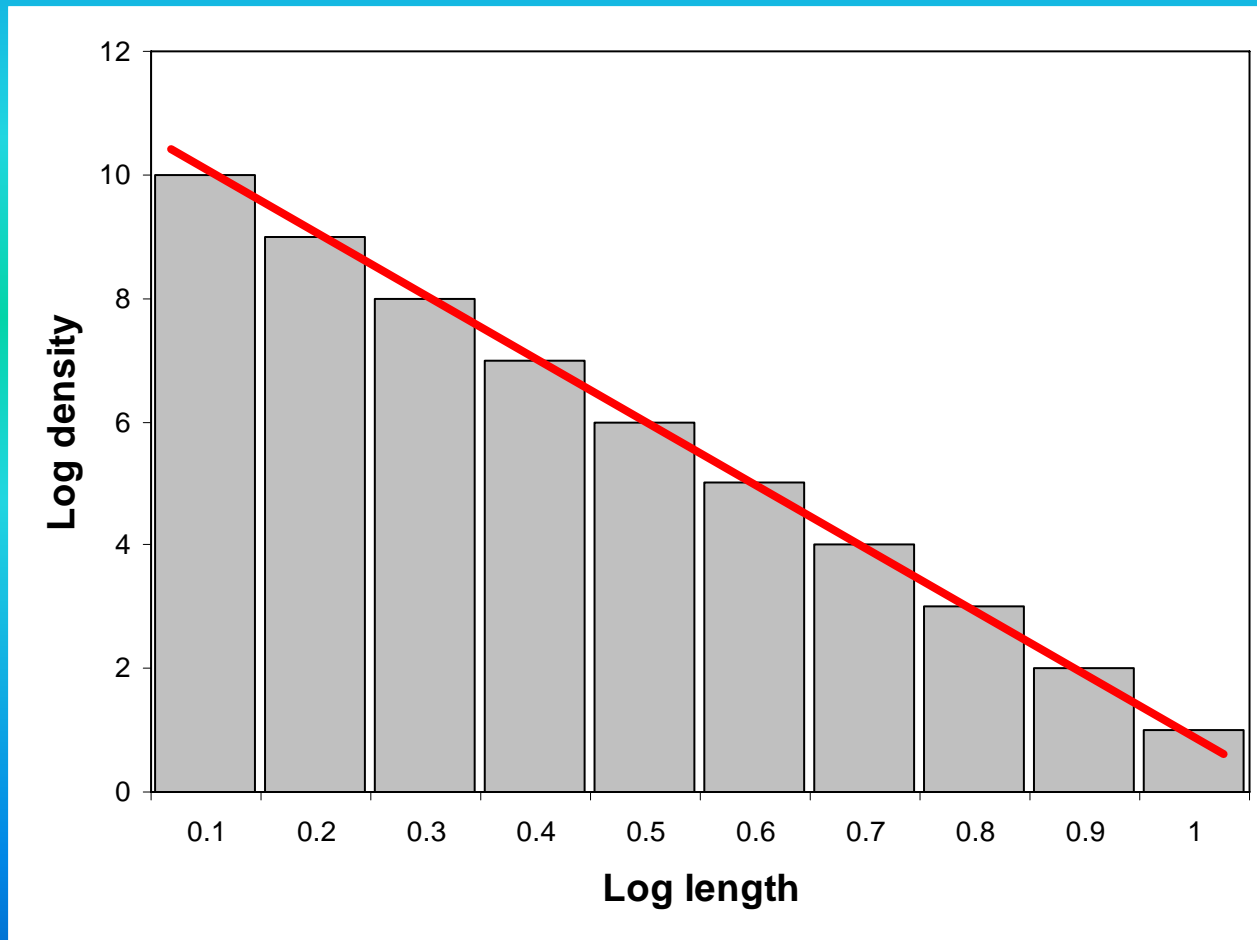
Organism length, mm	HN-IK		HN-Cobb		IK-Cobb	
	AM	GM	AM	GM	AM	GM
< 20	0.7	0.4	311	132	6455	219
20-100	1.5	0.8	27.2	14.5	31.7	18.0

AM: arithmetic mean; GM: geometric mean

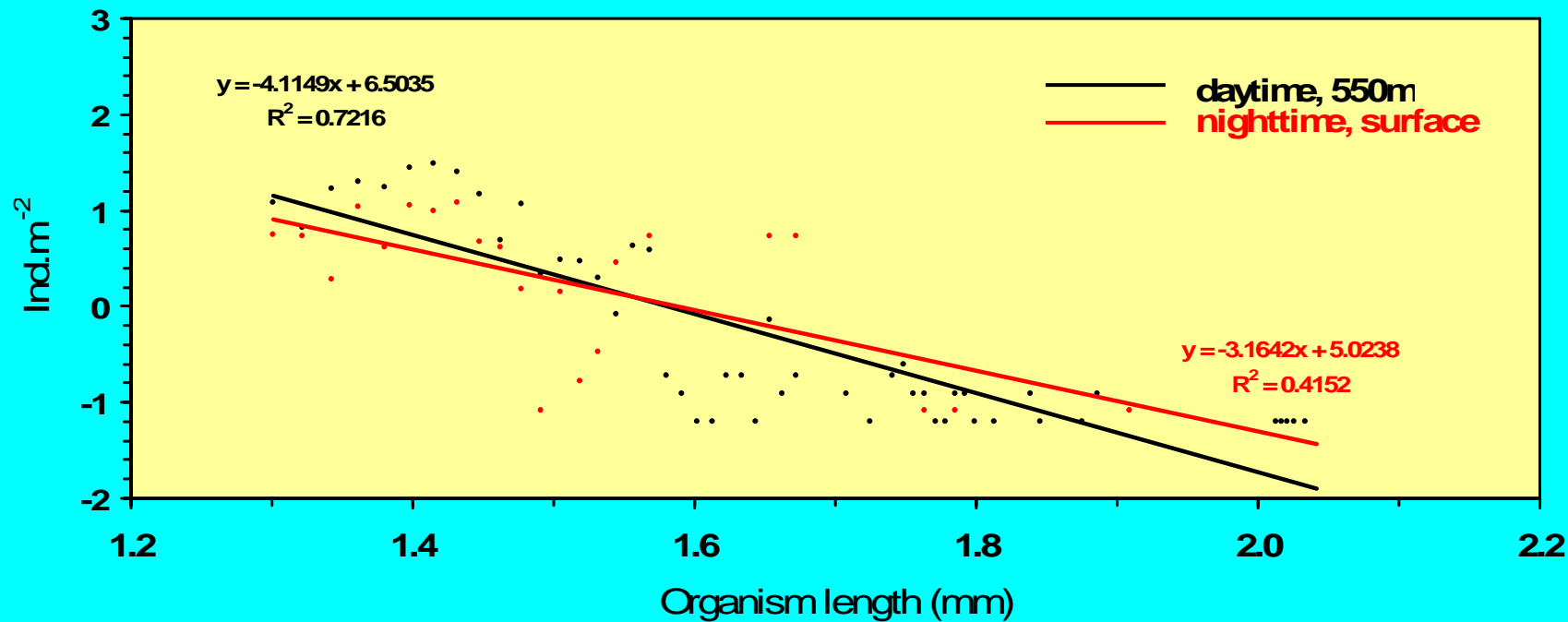
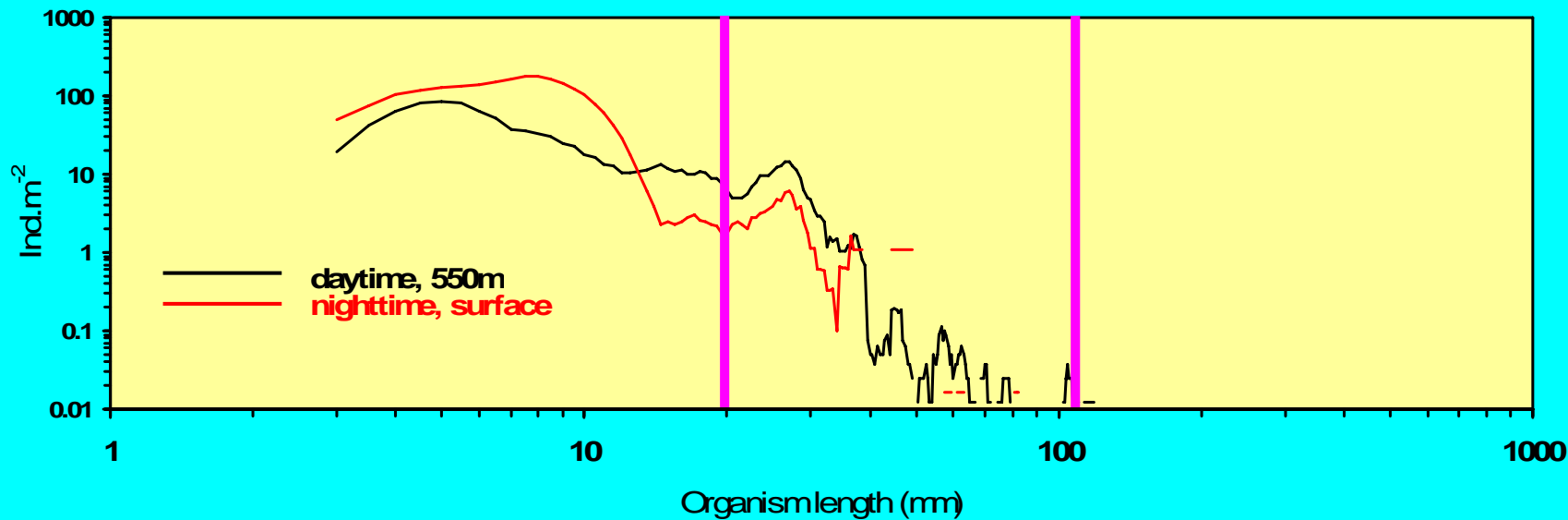
		IKT: true	IK: calculated			
			Cobb: AM	Cobb: GM	HN: AM	HN: GM
Total	daytime	249	185	105	135	255
Total	nighttime	90	123	61	26	99
Crustaceans	daytime	89	114	57	47	110
Crustaceans	nighttime	14	25	16	11	34
Fish	daytime	138	132	74	80	142
Fish	nighttime	25	43	27	8	12

		IKT: true	IK: calculated (% of difference)			
			Cobb: AM	Cobb: GM	HN: AM	HN: G
Total	daytime	249	-25.7	-57.8	-45.8	+2.4
Total	nighttime	90	+36.7	-32.2	-71.1	+10
Crustaceans	daytime	89	+28.1	-35.9	-47.2	-23.6
Crustaceans	nighttime	14	+78.6	+14.3	-21.4	+142.8
Fish	daytime	138	-4.3	-46.4	-42.0	+2.9
Fish	nighttime	25	+72.0	+8.0	-68.0	-52.0

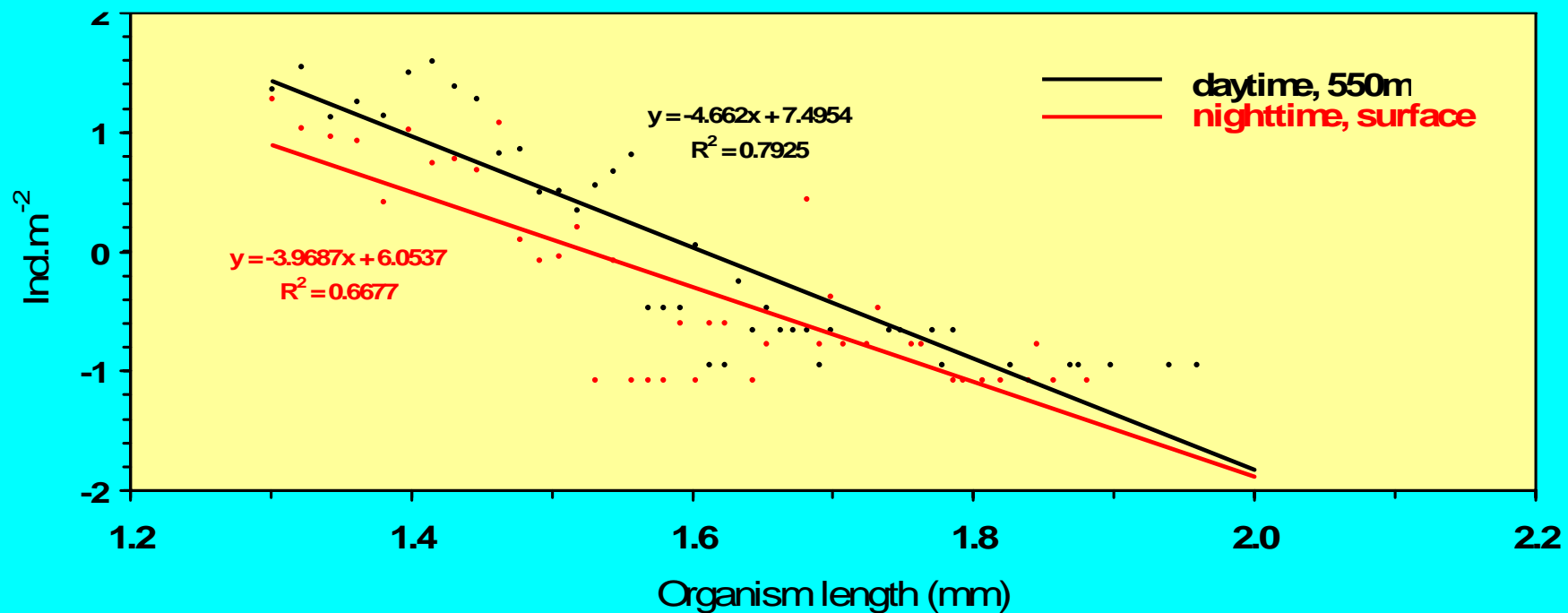
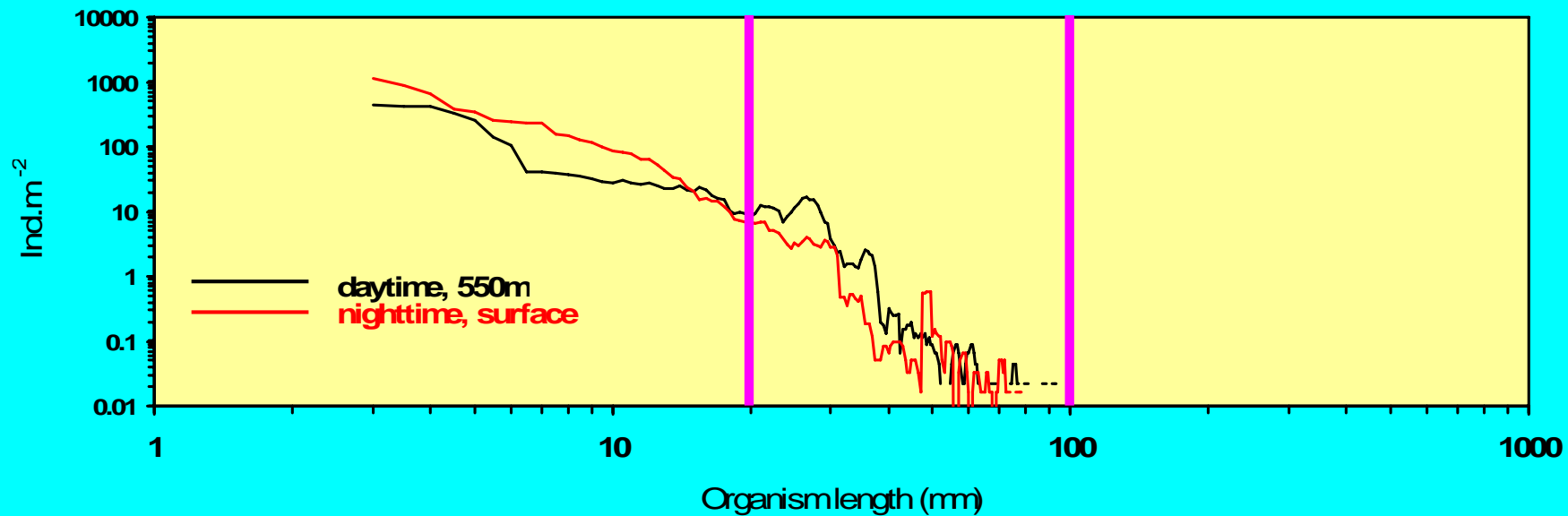
Tseitin (1984) concept: equal log-size intervals in natural aquatic systems have identical plankton densities



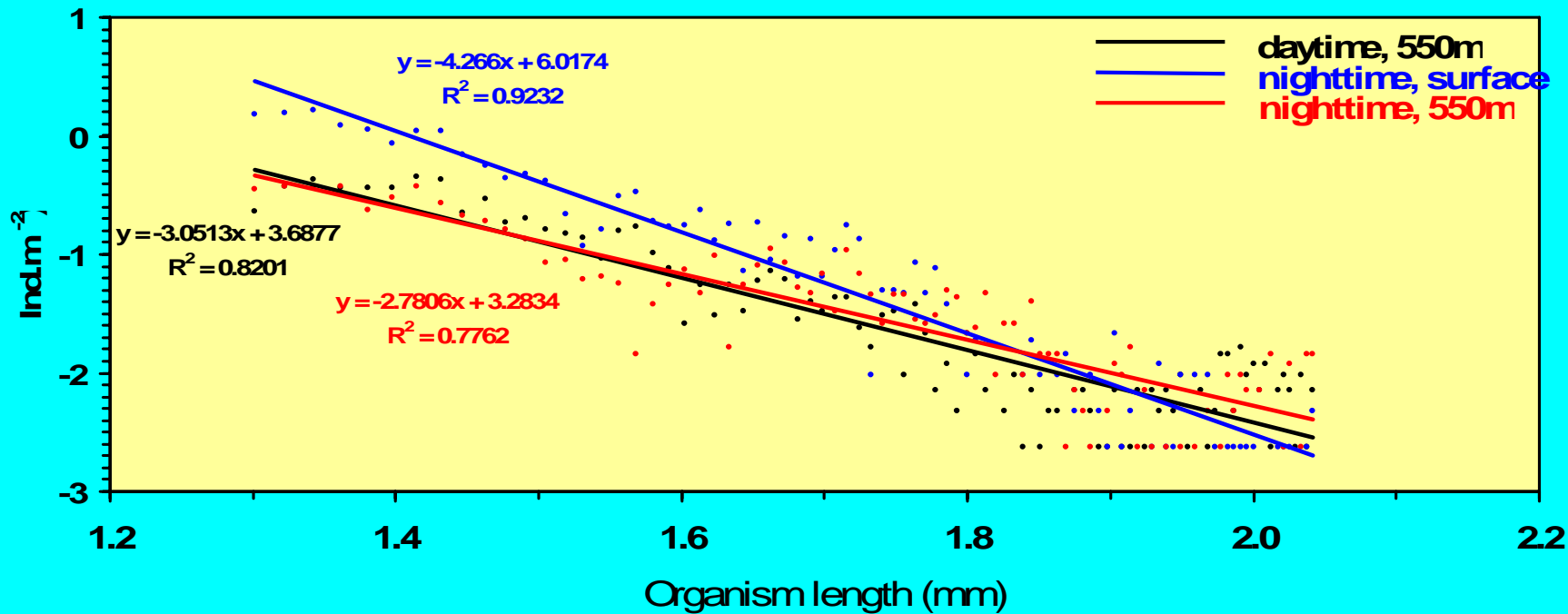
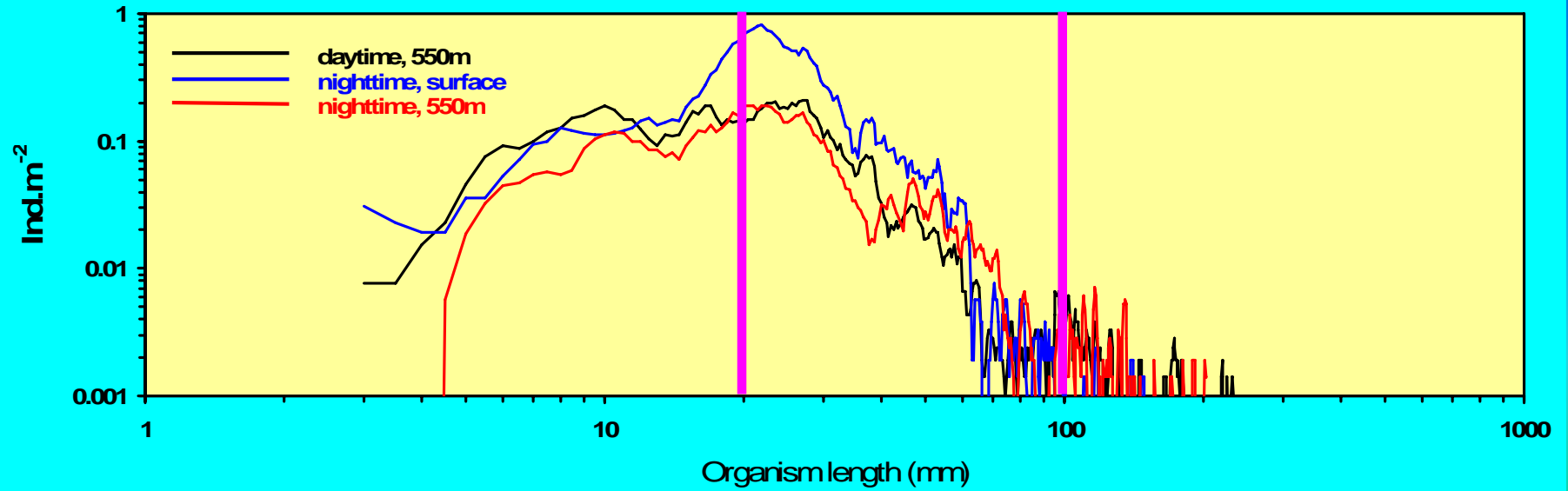
Hokkaido Net

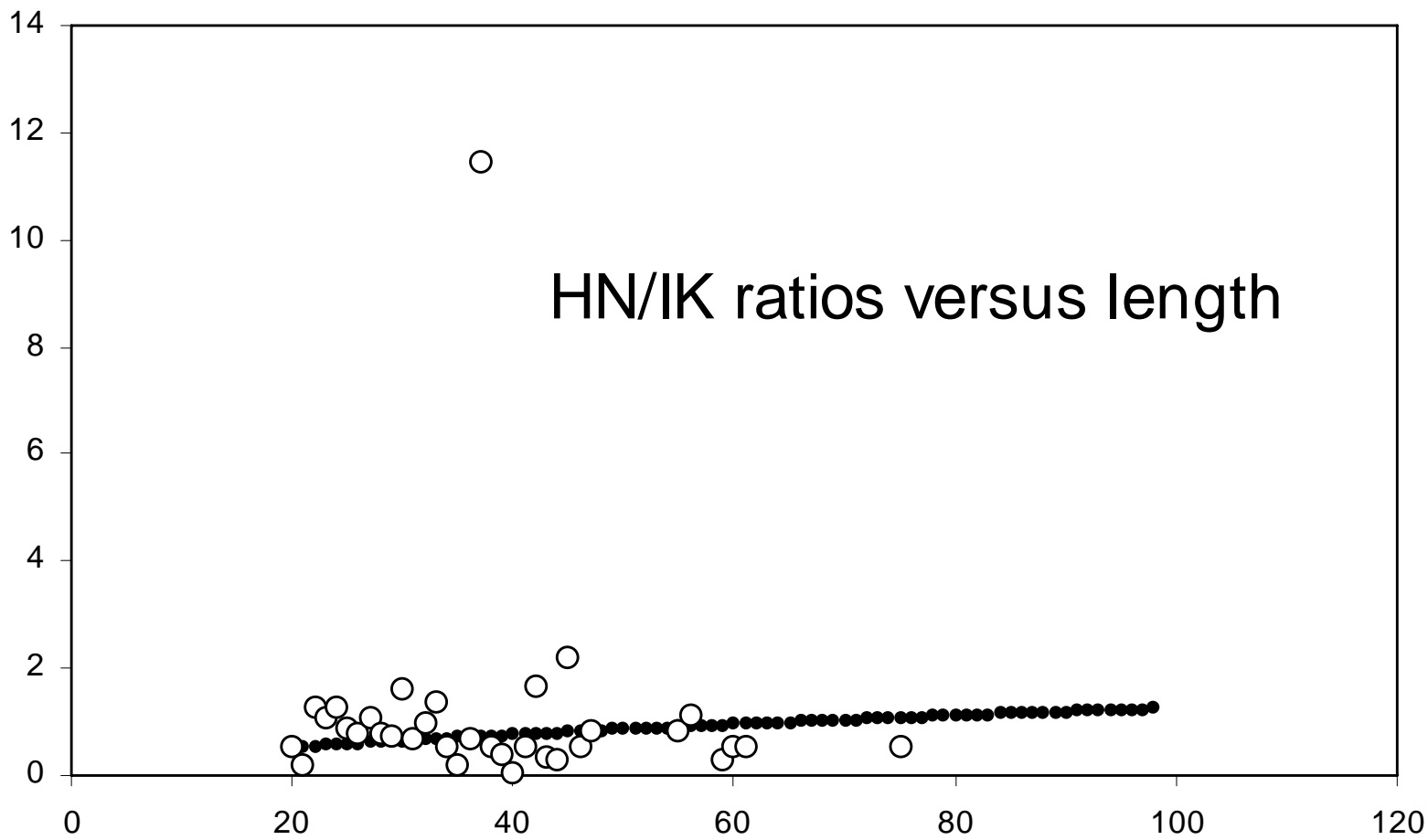


Isaacs Kidd Midwater Trawl



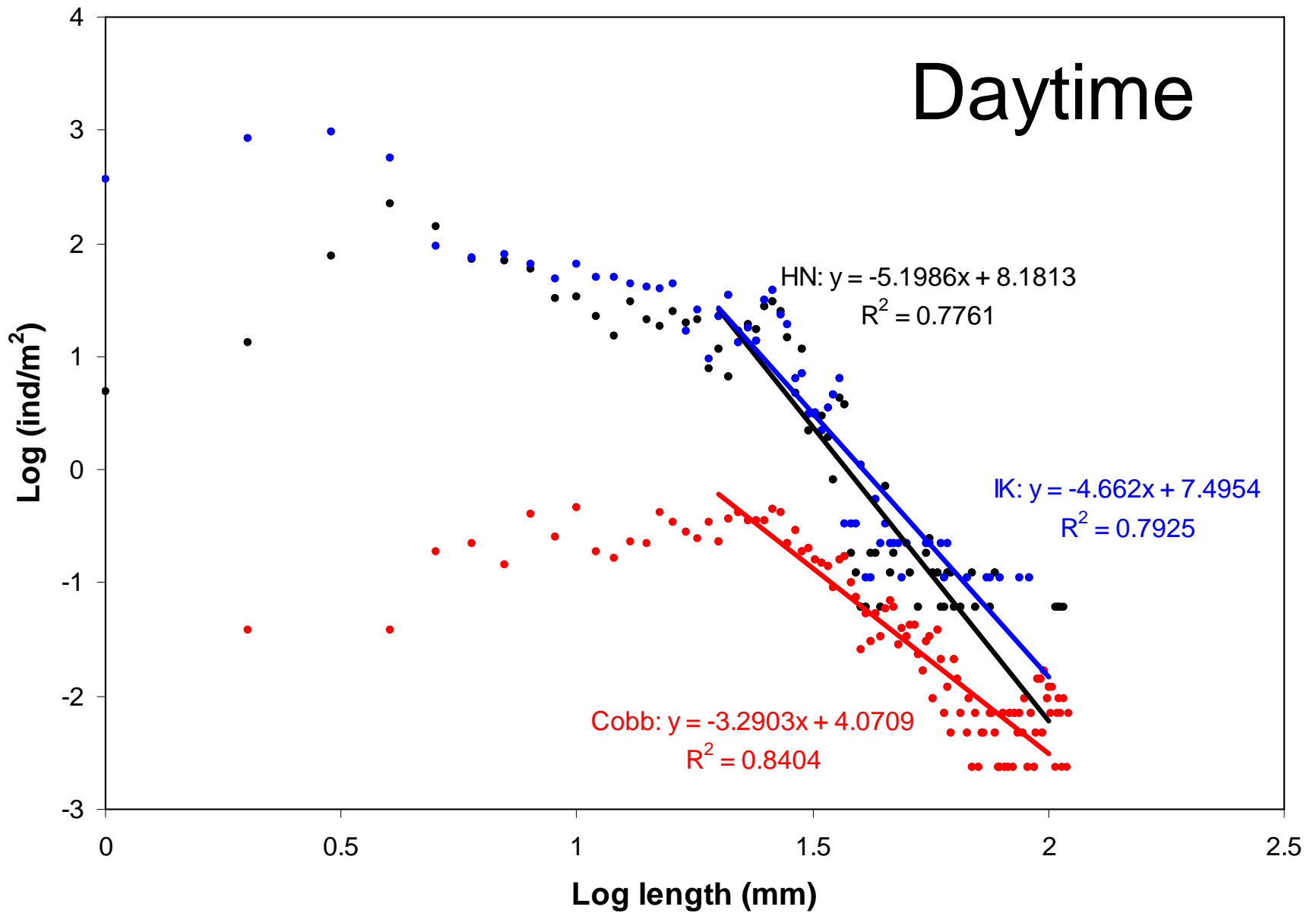
Cobb Trawl



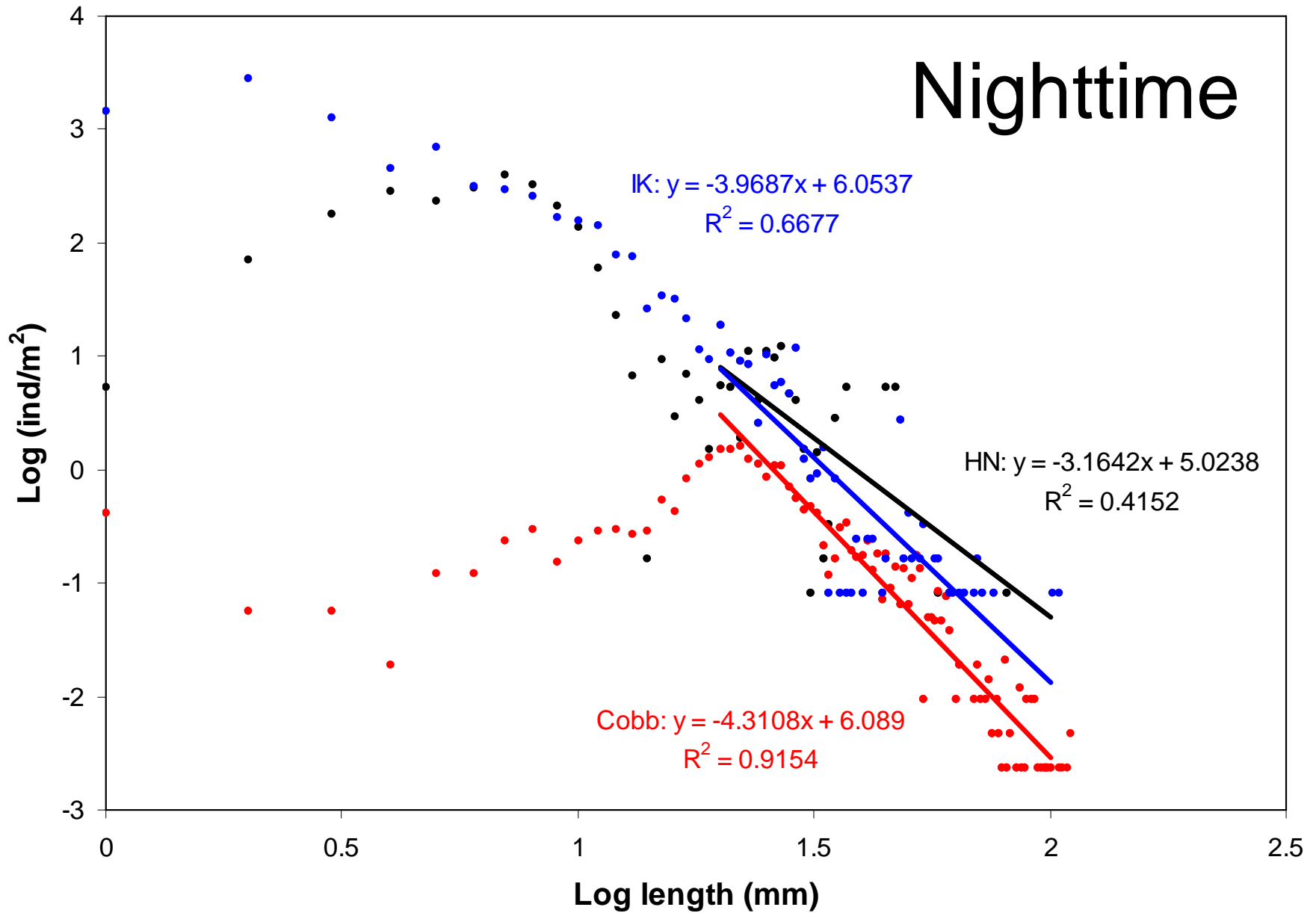


HN/IK ratios versus length

Daytime

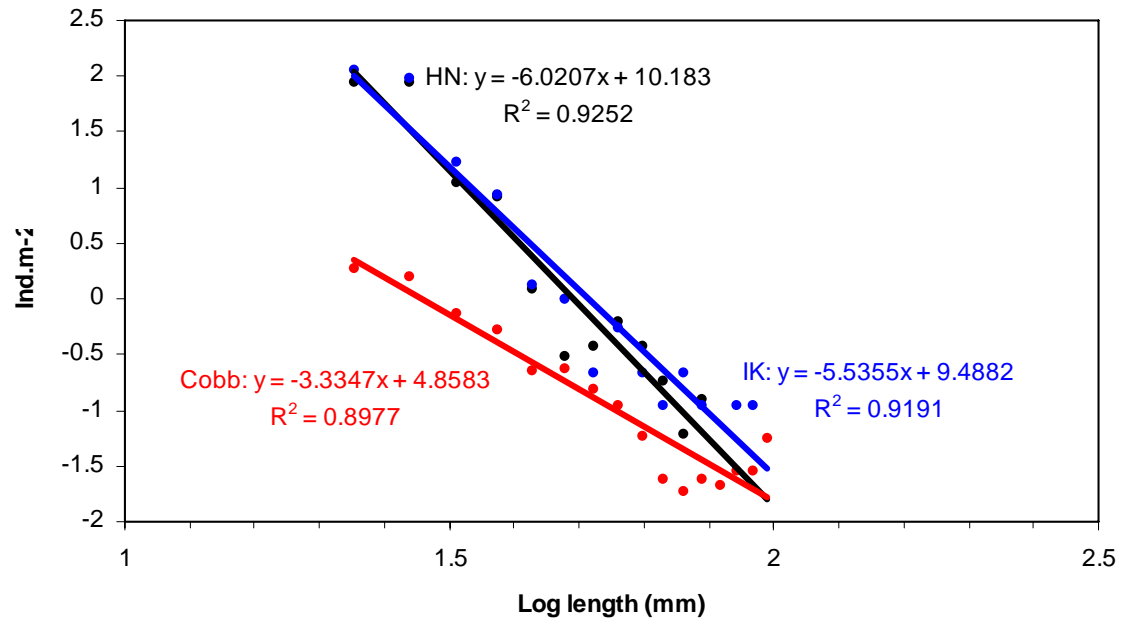


Nighttime

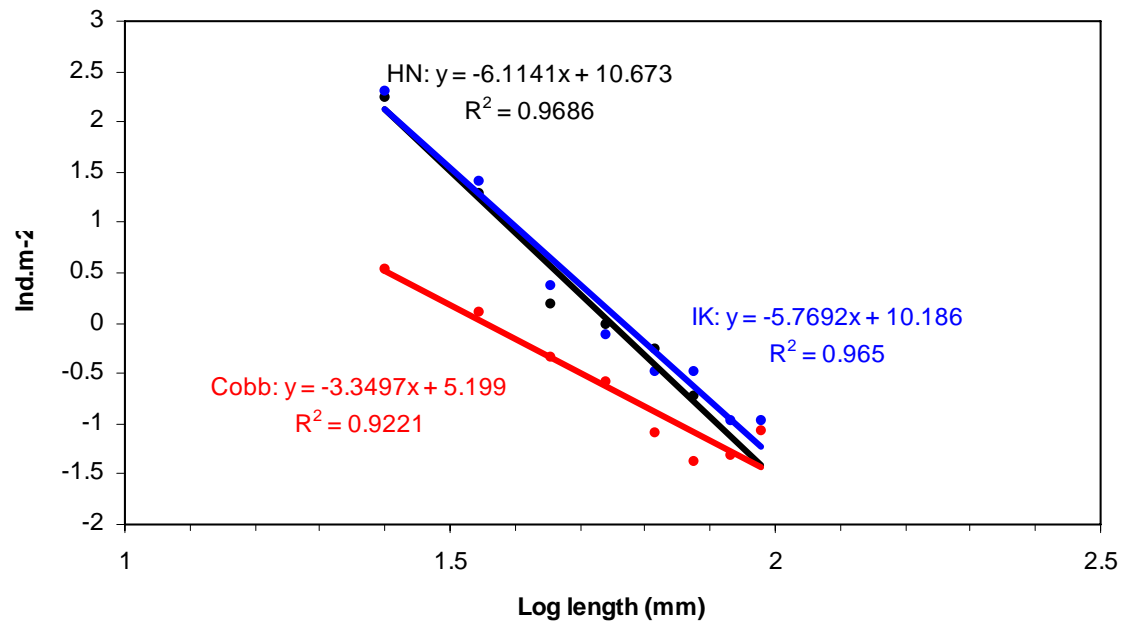


Daytime

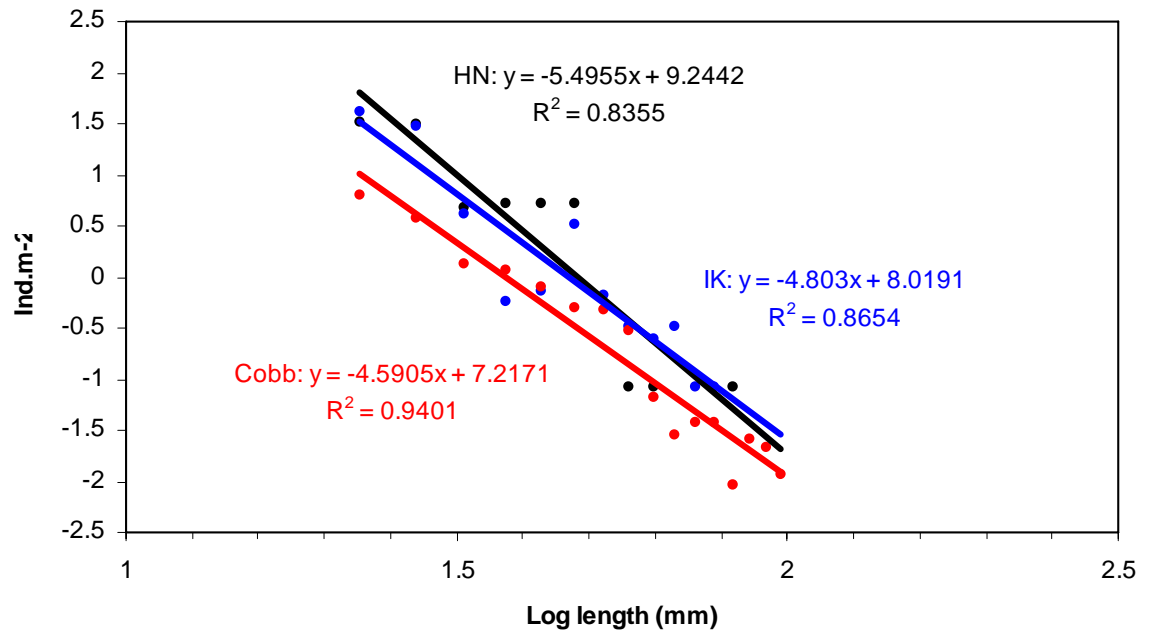
5 mm



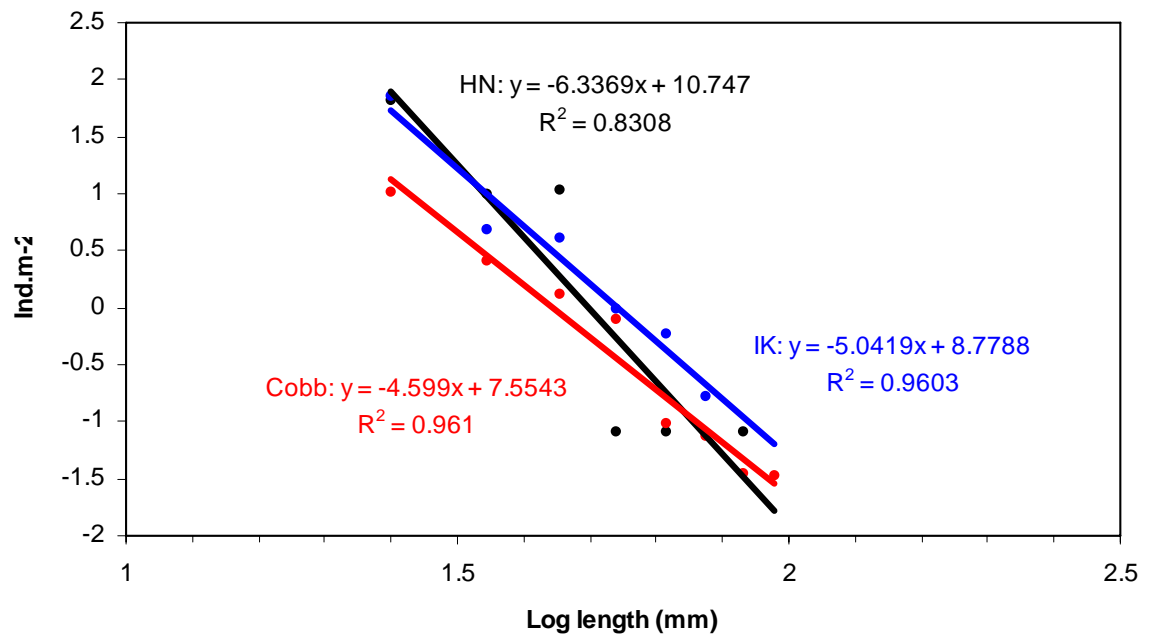
10 mm



Nighttime
5 mm



10 mm



		IKT: true		IK: calculated	
				Cobb	HN
1 mm	Total	daytime	238	161	350
	Total	nighttime	82	48	70
	Total	daytime	238	-32%	47%
	Total	nighttime	82	-41%	-15%
	Total	daytime	238	-31%	-16%
	Total	nighttime	82	-2%	-35%
5 mm	Total	daytime	238	164	199
	Total	nighttime	82	80	53
	Total	daytime	238	-31%	-16%
	Total	nighttime	82	-2%	-35%
	Total	daytime	238	-30%	-16%
	Total	nighttime	82	-12%	-11%
10 mm	Total	daytime	238	167	200
	Total	nighttime	82	72	73
	Total	daytime	238	-30%	-16%
	Total	nighttime	82	-12%	-11%
	Total	daytime	238	-30%	-16%
	Total	nighttime	82	-12%	-11%

Conclusions

- In a diverse micronekton community, inter-correction coefficients is only possible to obtain for large taxonomic groups
- Individual gears sample different size groups of plankton and three compared gears sampled size groups from meso- to mega- plankton
- It appears that the bin-size is important for calculating reliable intercalibration coefficients between three gears investigated
- More experiments are required, in other oceanic realms preferably, to verify the consistency of the correction coefficients between sampling gears