

Migration and vertical movements of a tagged Atlantic goosefish on Georges Bank

by

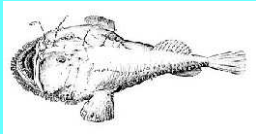
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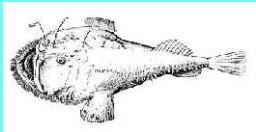
And

David Martins, School for Marine Science and
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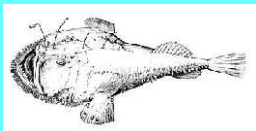
Introduction



Lophius americanus is known as American goosefish or monkfish

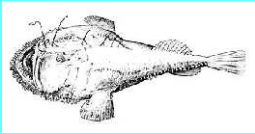


Lack a swim bladder, head strongly depressed, thought to be sluggish bottom dwelling ambush predator

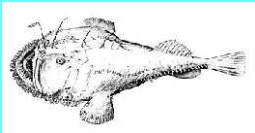


Behavior and ecology poorly understood

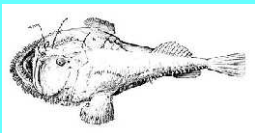
Biology



7th most valuable fishery in NE US and
17th Nationally

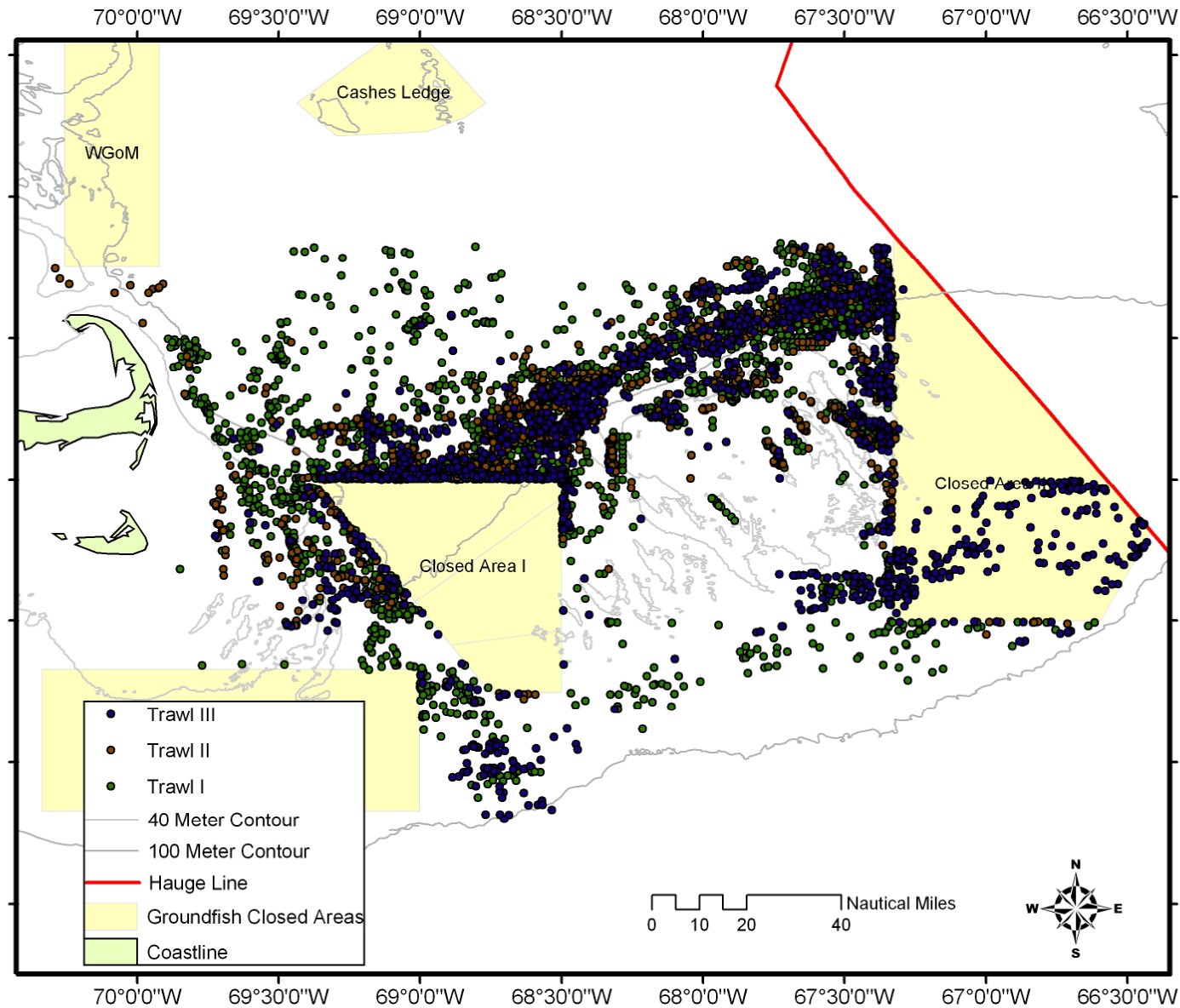


Possible inshore-offshore seasonal
movements?



No previous tagging efforts in western
Atlantic (related species tagged in eastern
Atlantic)

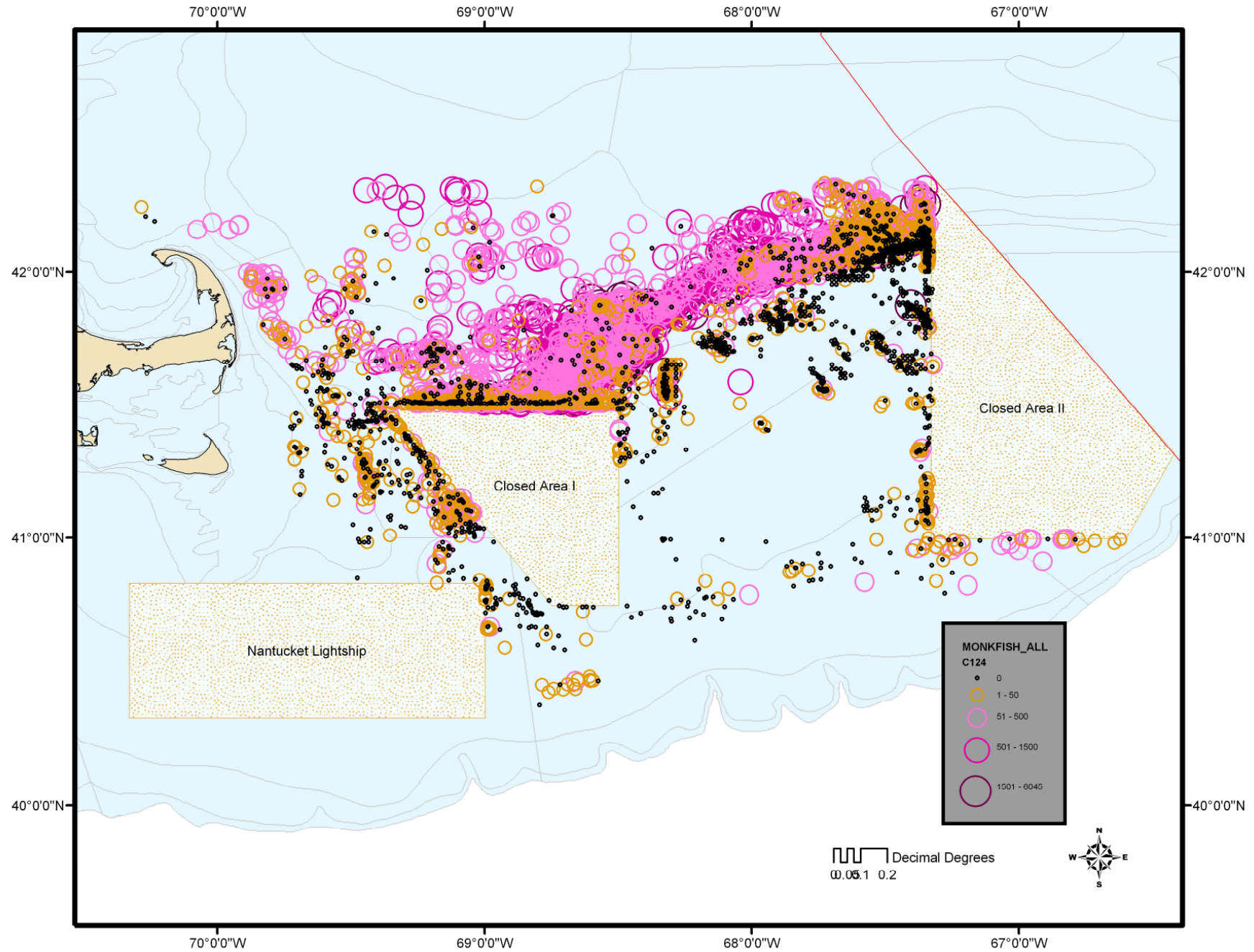
SMAST Industry-Based Trawl Survey 2000-2004



Dominant catch in SMAST Trawl Survey

Scientific name	Mean CPUE (lbs/tow h)	SE
Rajidae	311	9.7
<i>Melanogrammus aeglefinus</i>	100	12.0
<i>Lophius americanus</i>	88	1.9
<i>Gadus morhua</i>	87	5.4
<i>Pleuronectes americanus</i>	51	2.0
<i>Pleuronectes ferrugineus</i>	35	1.3
<i>Hippoglossoides platessoides</i>	16	0.4
<i>Glyptocephalus cynoglossus</i>	15	0.3
<i>Homarus americanus</i>	11	0.4
<i>Pollachius virens</i>	10	1.2
<i>Squalus acanthias</i>	8	1.2
<i>Raja laevis</i>	6	0.8
<i>Urophycis sp</i>	6	0.3
<i>Hemitripterus americanus</i>	6	0.3
Cottidae	5	0.3

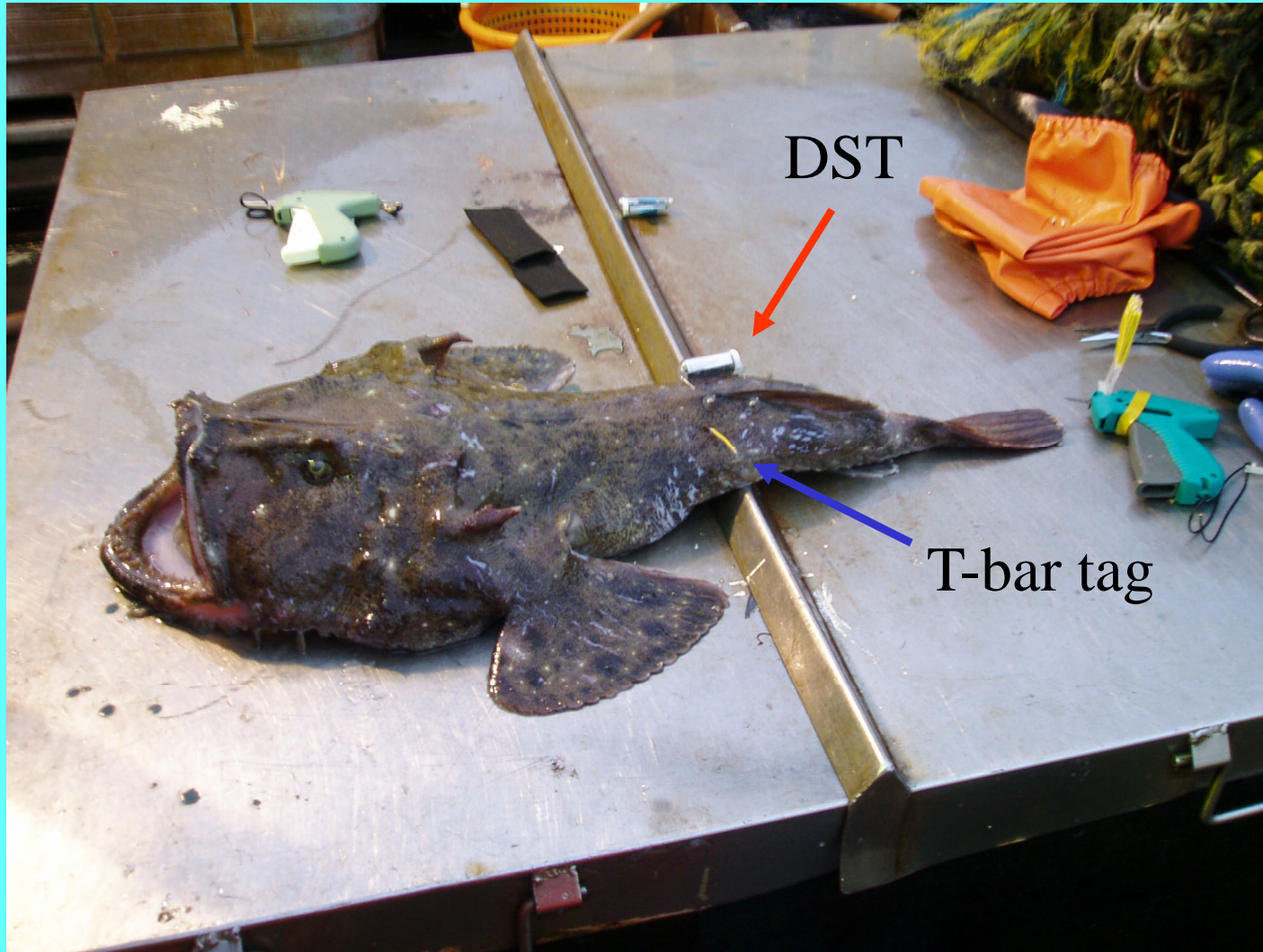
Monkfish



Tub of monkfish



Tagged *Lophius americanus*



Tag recapture location

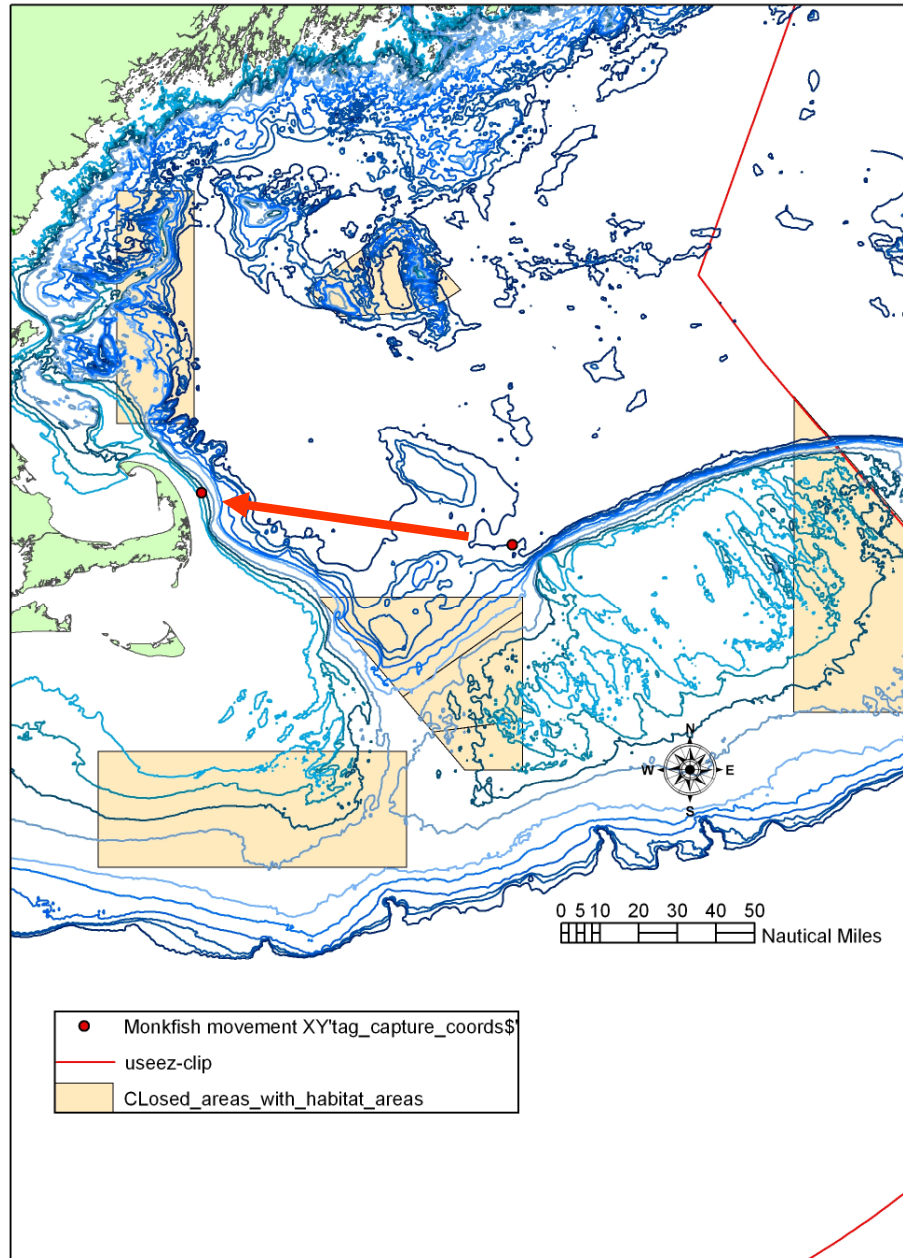
Tagged 9 Dec 2003

Recaptured 18 June 2004

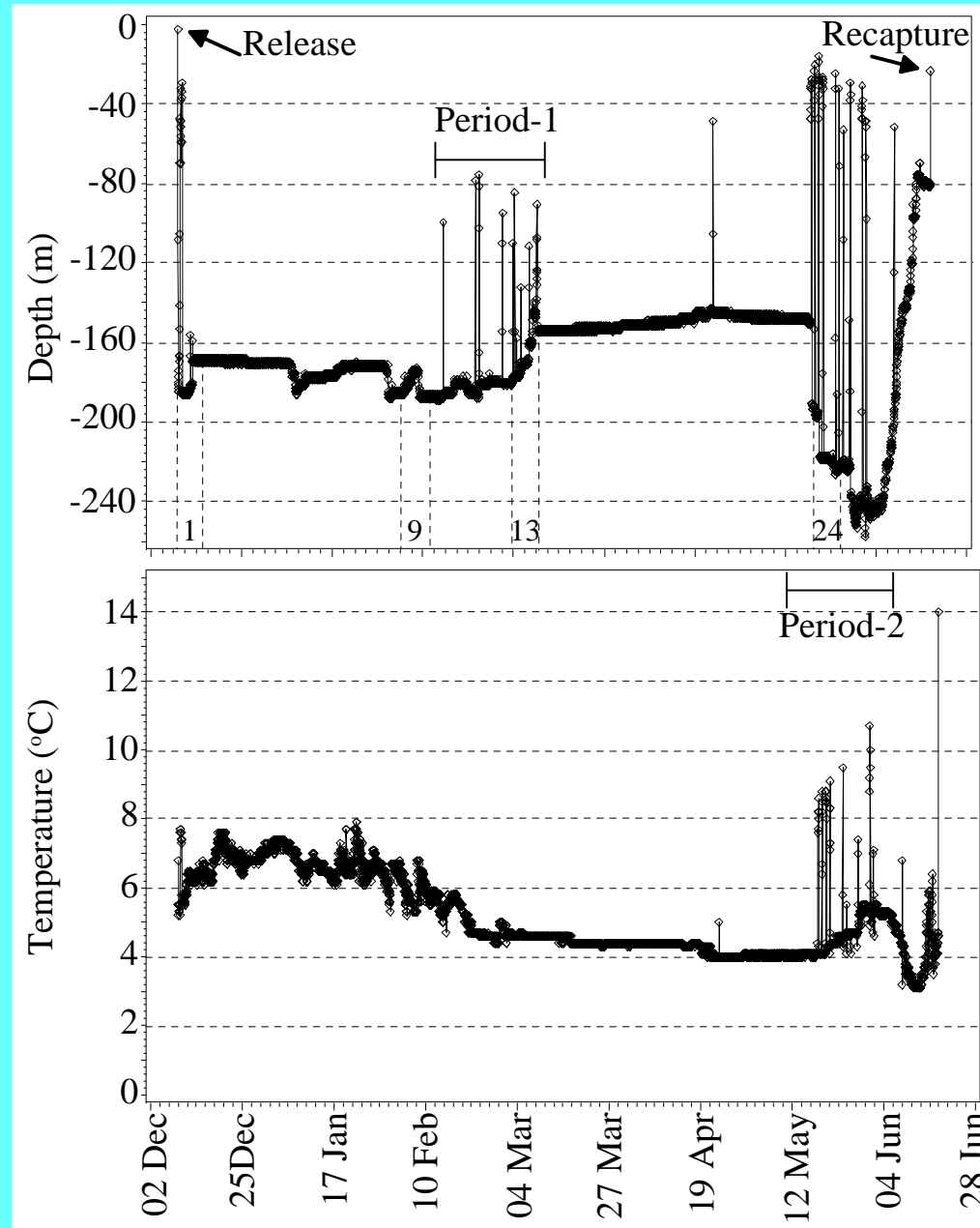
192 days at large

113 km travel

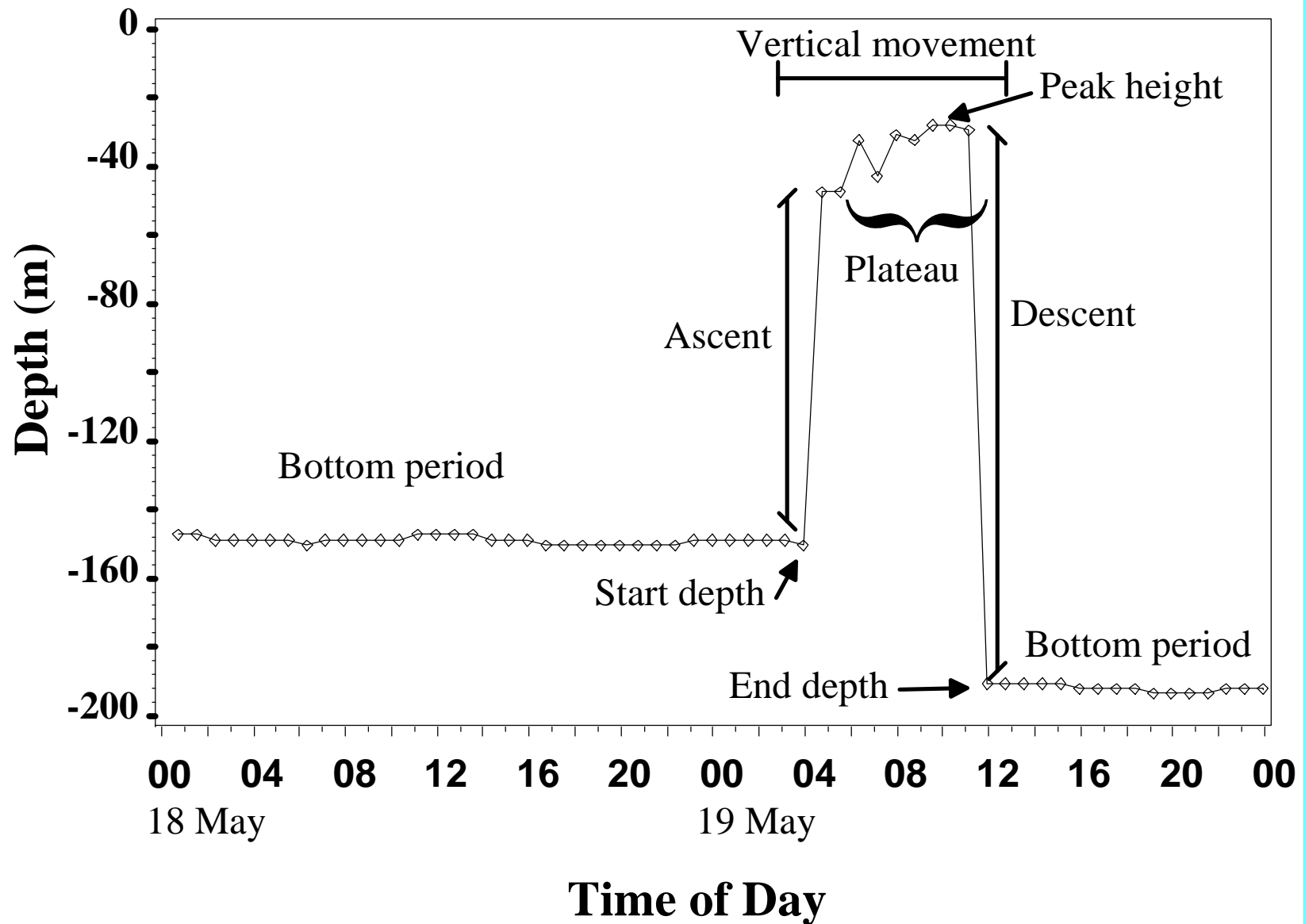
Cape cod

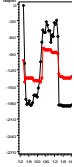


Depth and temperature profile recorded on the DST



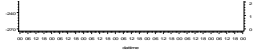
Event measurements





Week 1 after release

Week 13 after release

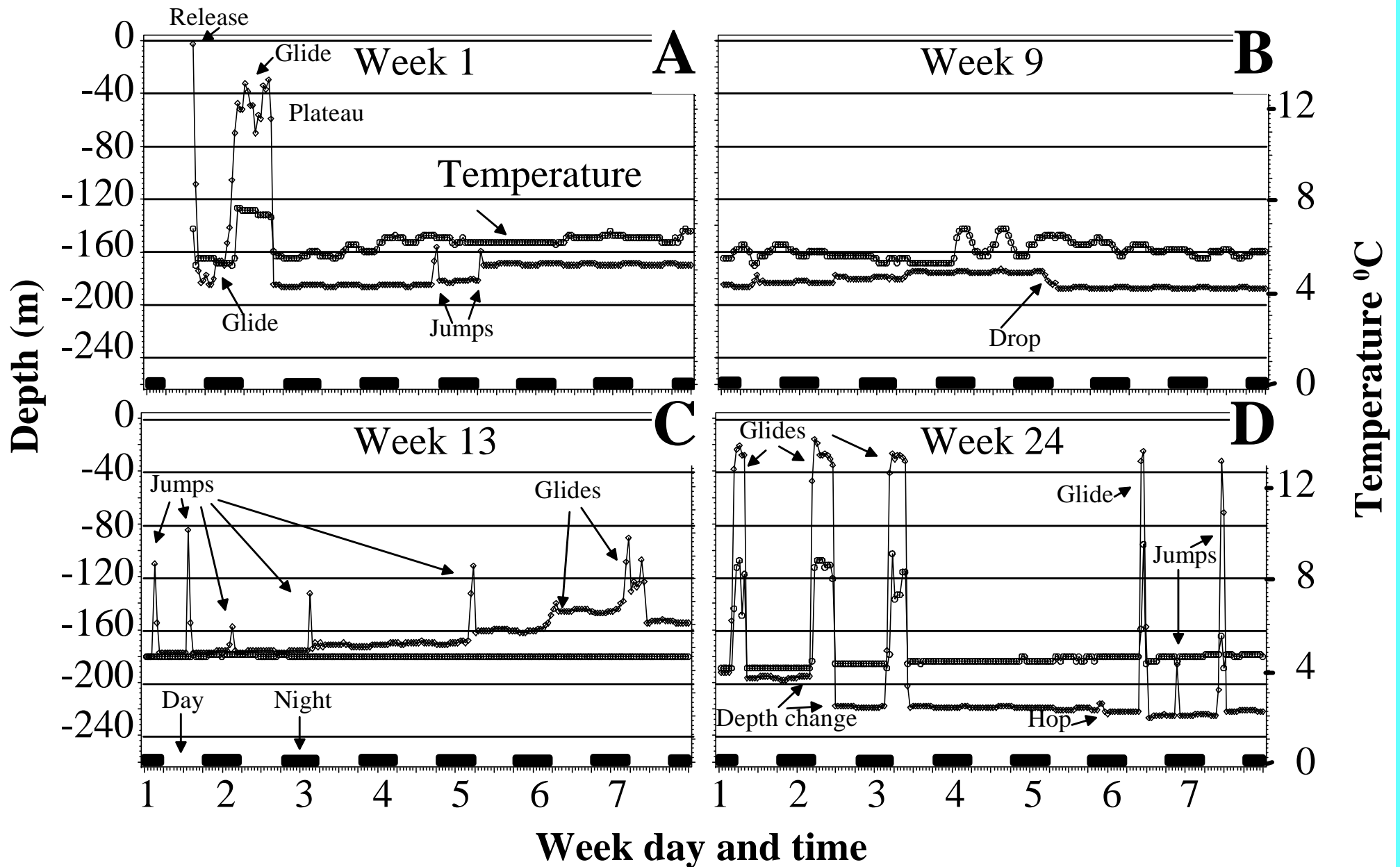


**Week
24
after
release**

May

June

Vertical movement behavior



Vertical movement statistics

Event attribute	N	Minimum	Maximum	Mean	Standard deviation
Duration (minutes)	43	48	864	177	162
Total height of movement (m)	43	0	209	75	73
Rate of ascent (m/minute)	40	0.079	3.958	0.994	0.915
Plateau height (m)	40	26	216	108	59
Plateau duration (minutes)	40	0	576	70	130
Rate of descent (m/minute)	43	0.014	4.208	1.199	1.295
Bottom depth change (m)	43	-41	24	-1	10
Absolute bottom depth change (m)	43	0	41	6	8
Rate of bottom change (m/hour)	43	0.000	7.5	1.7	1.604

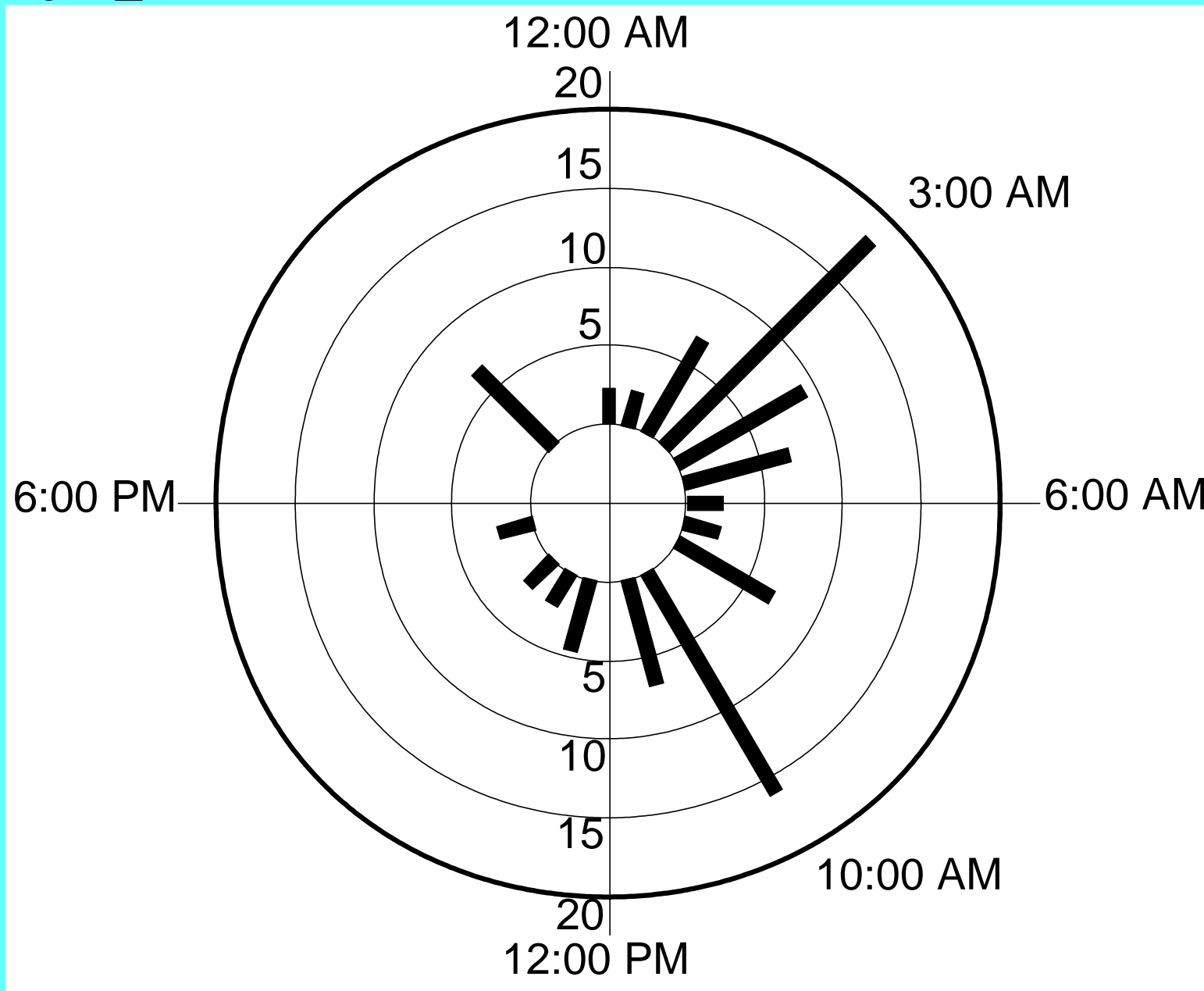
Bottom event statistics

Event attribute	N	Minimum	Maximum	Mean	Standard deviation
Duration (minutes)	41	384	64368	6413	12687
Absolute depth range (m)	41	0	91	6	16
Slope (m/hr)	41	-0.69	0.74	0.02	0.19
Absolute slope (m/hr)	41	0.00	0.74	0.07	0.18
Events with significant gradients					
Duration (m)	16	912	64368	13472	18372
Depth range (m)	16	-18	91	12	26
Absolute depth range (m)	16	3	91	17	23
Slope (m/hr)	16	-0.69	0.74	0.06	0.03
Absolute slope (m/hr)	16	0.00	0.74	0.18	0.25

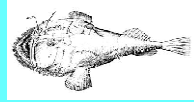
Between-period comparison of vertical events

Period 1	Number	Maximum	Mean
Duration (minutes)	19	480	131
Plateau duration (minutes)		240	19
Total height (m)		112	41
Period 2			
Duration (minutes)	16	432	198
Plateau duration (minutes)		384	108
Total height (m)		209	132

Daily pattern of vertical movements



Conclusions



Goosefish appear to make periodic vertical migrations for unknown reasons

Possible selective tidal transport?



Goosefish make three types of movements:



1) bottom movements along the depth contour



2) short vertical hops or jumps that may result in horizontal migrations



3) large, longer-duration vertical movements that may result in horizontal migration

Acknowledgements

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Darin Jones and Ross Kessler

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David Martins



Ross Kessler



Darin Jones

Joachim Groeger, not pictured