Biological Monitoring Program for the Atlantic Coast of New Jersey

Asbury Park to Manasquan Inlet, Beach Erosion Control Project

Intertidal, Nearshore & Offshore Infauna

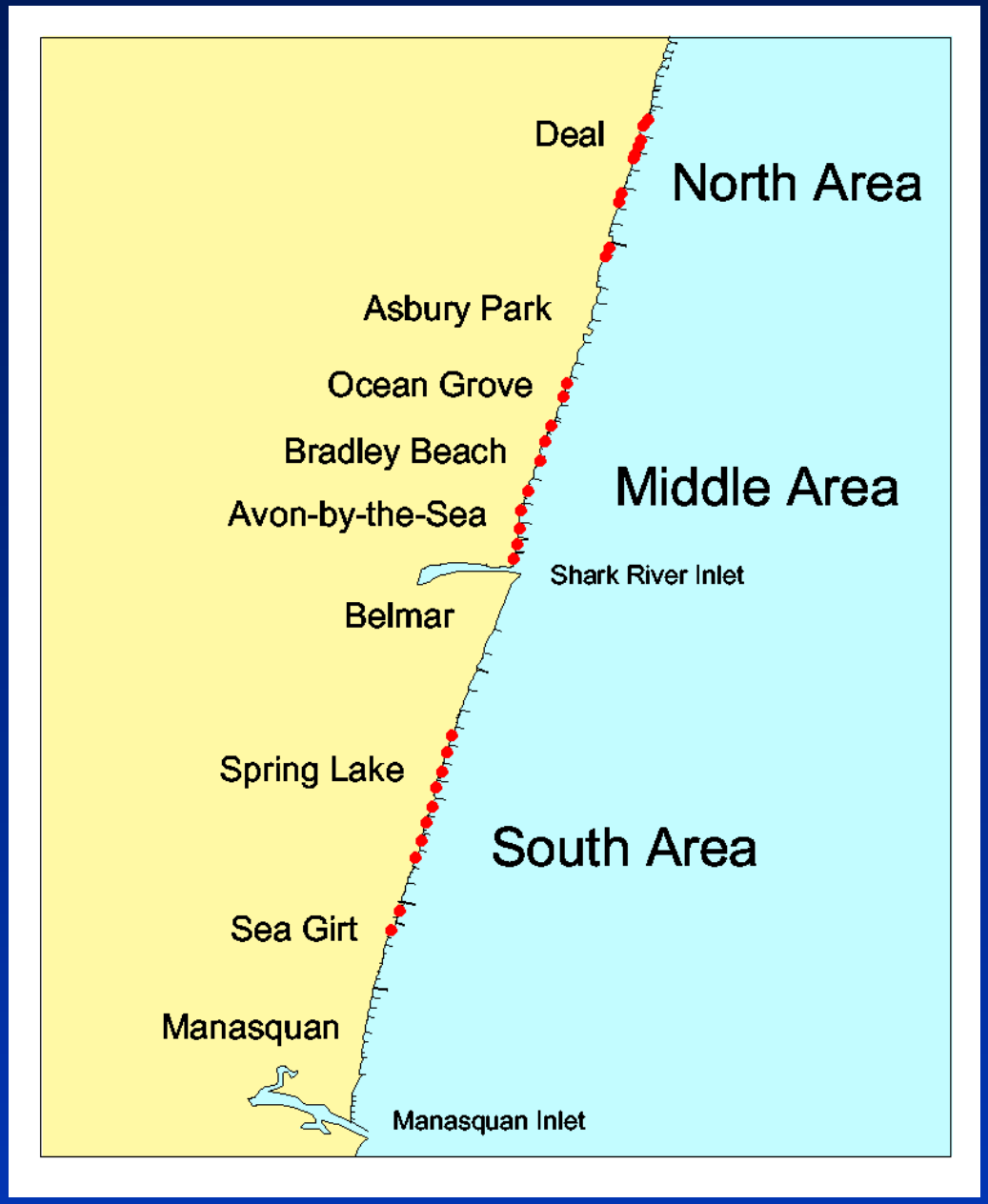
Why Benthos?

Forage for surf zone fish

Forage for shorebirds

Quantifiable patterns of impact

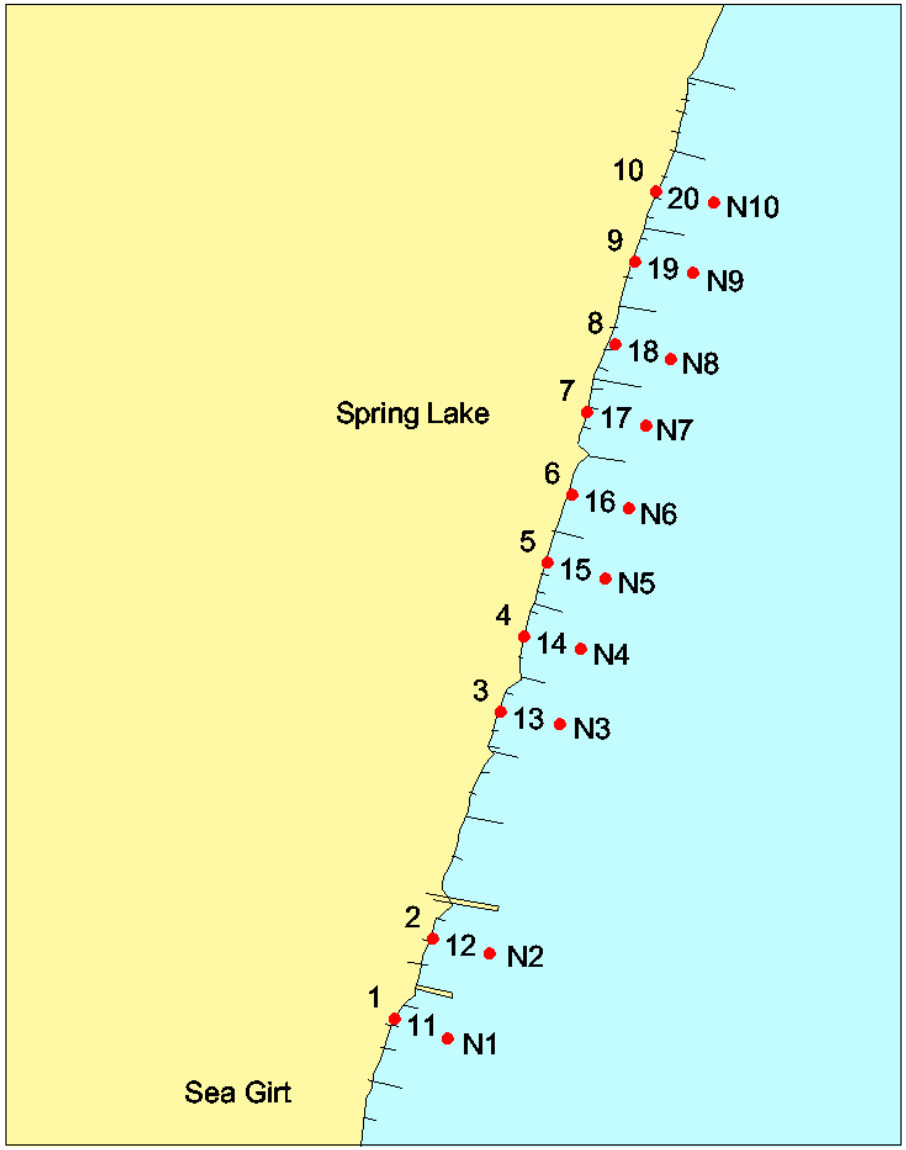
Intertidal & Nearshore Project Area



Manasquan Inlet

Figure 1-3. Oblique aerial photograph of pre-construction beaches at the Manasquan River Inlet looking north.

Intertidal & Nearshore Benthic Stations - South Area



Sampling Schedule

Long-term –	May and September May 1994- May 2000
Short-term -	Monthly May-Nov 97 May 99-May 00

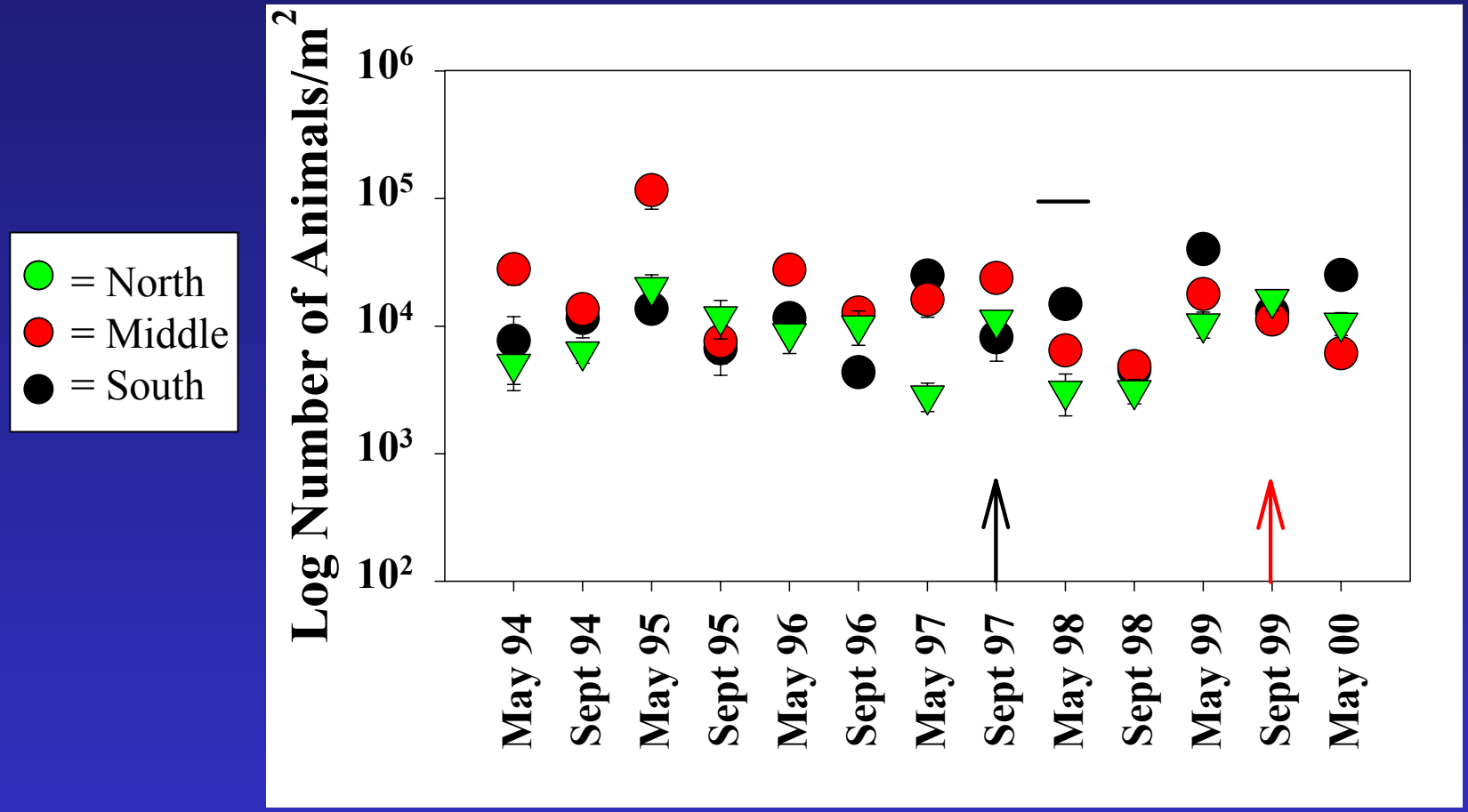
Intertidal Benthic Sampling

Nearshore Sampling

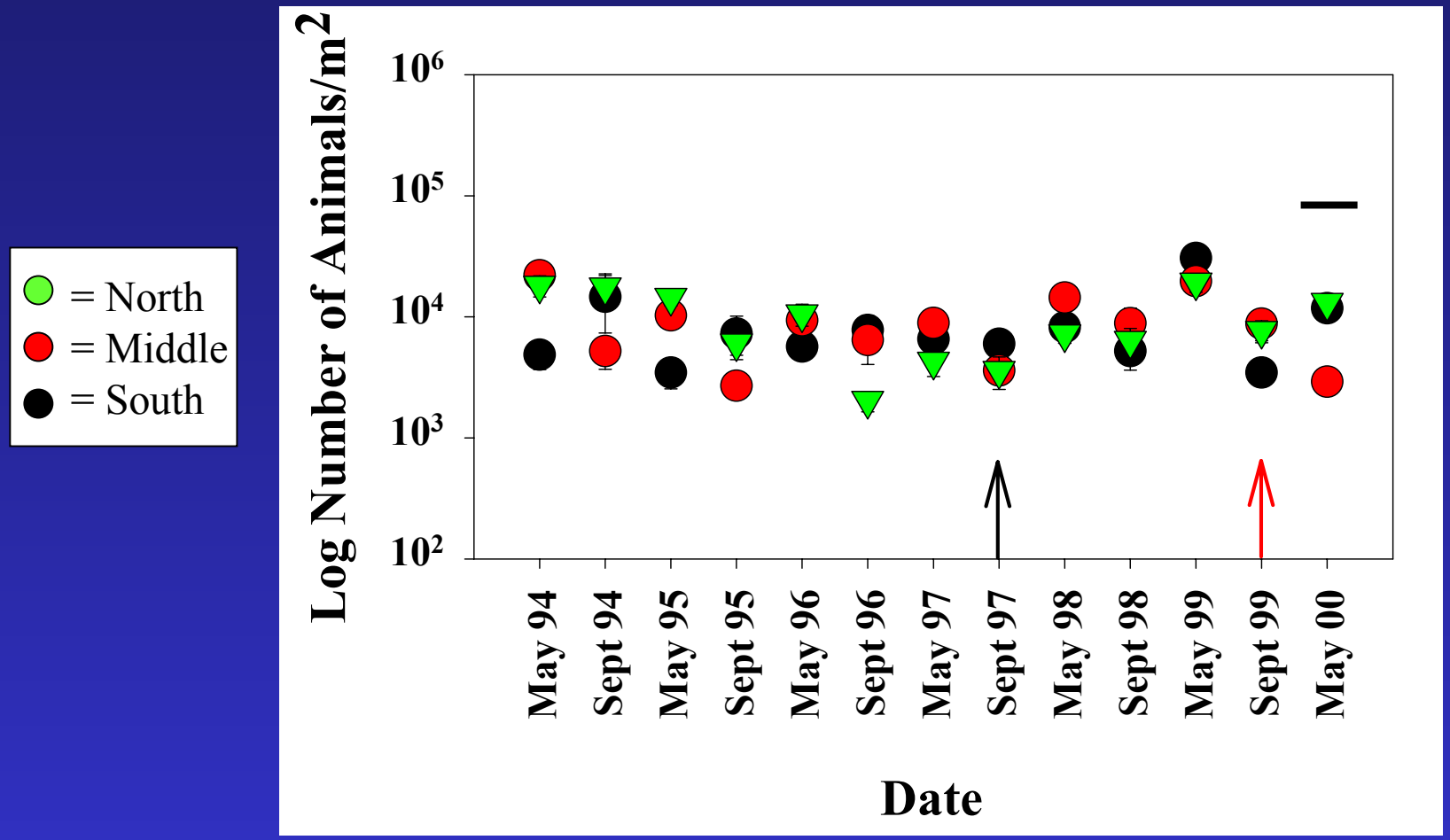
Smith-McIntyre Grab

Intertidal & Nearshore Infauna

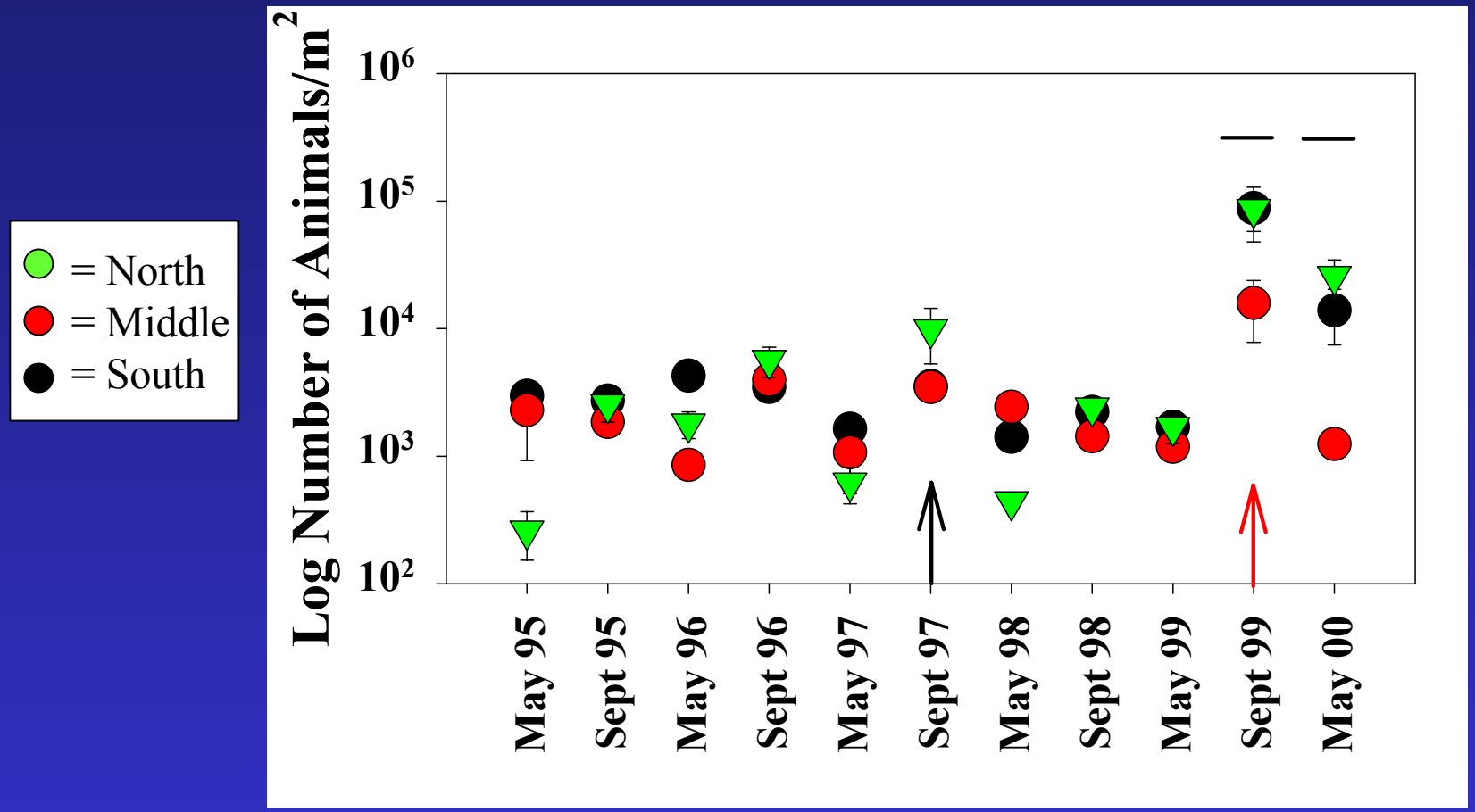
MLW Abundance



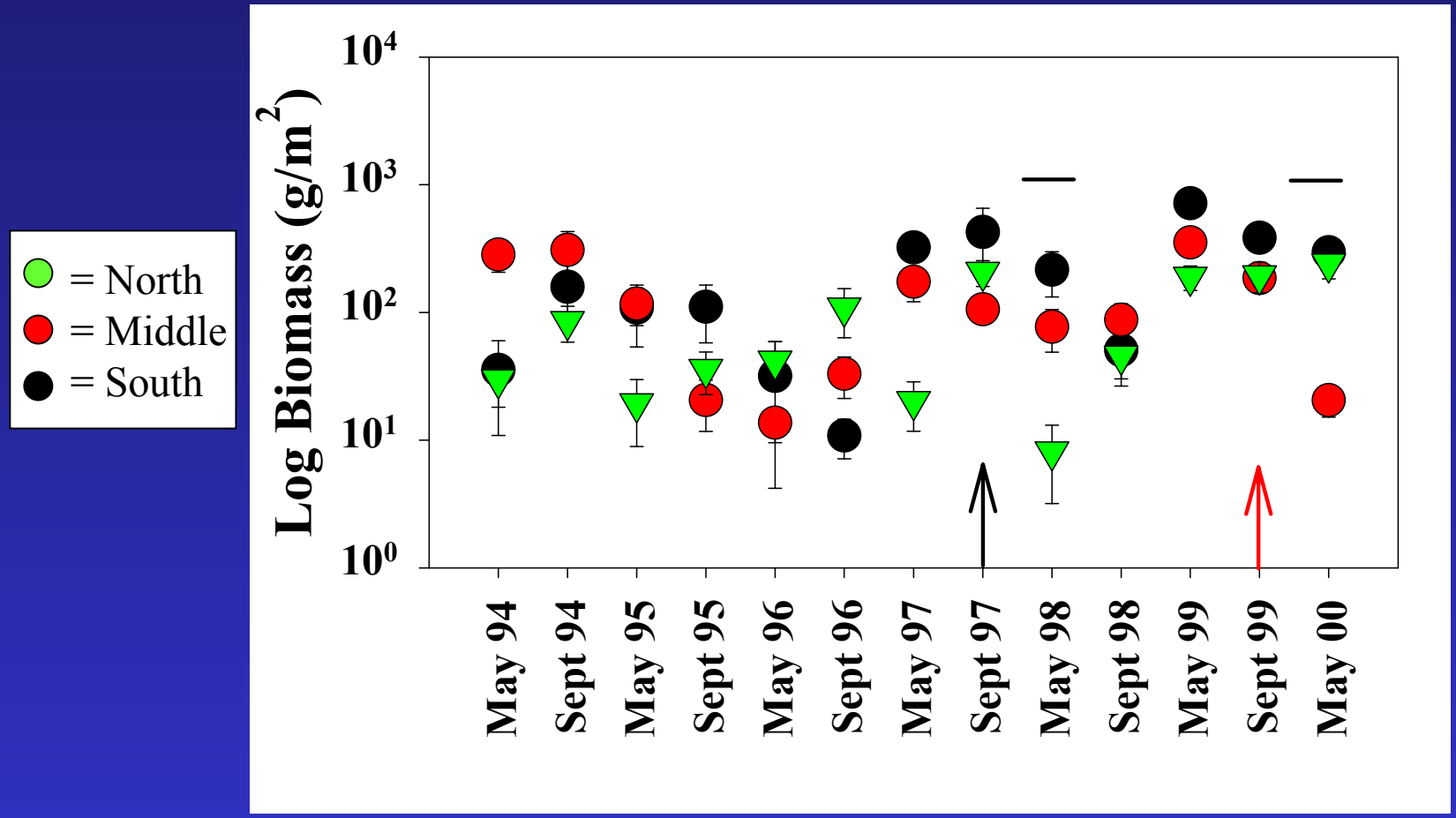
MLW-1m Abundance



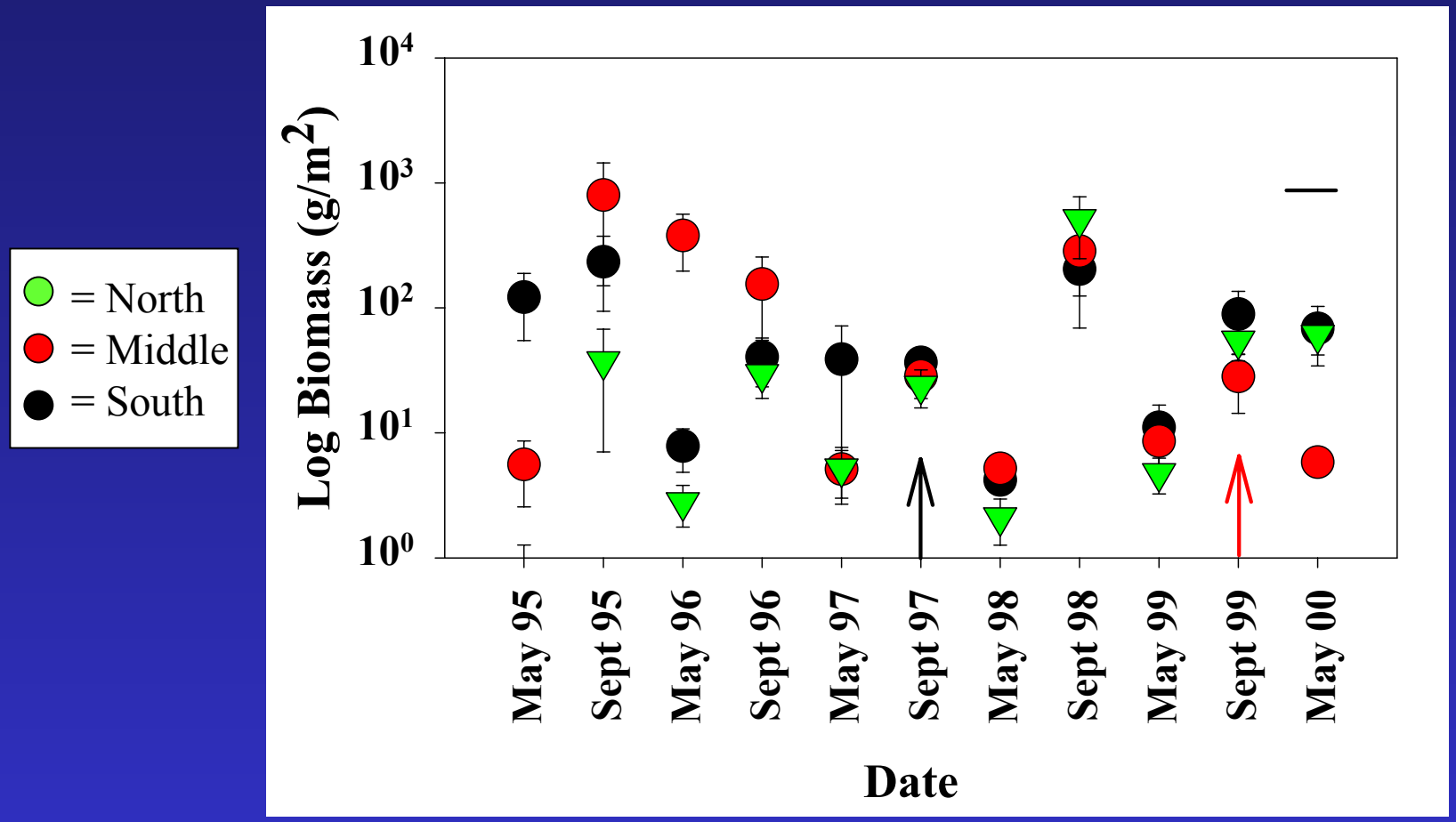
Nearshore Abundance



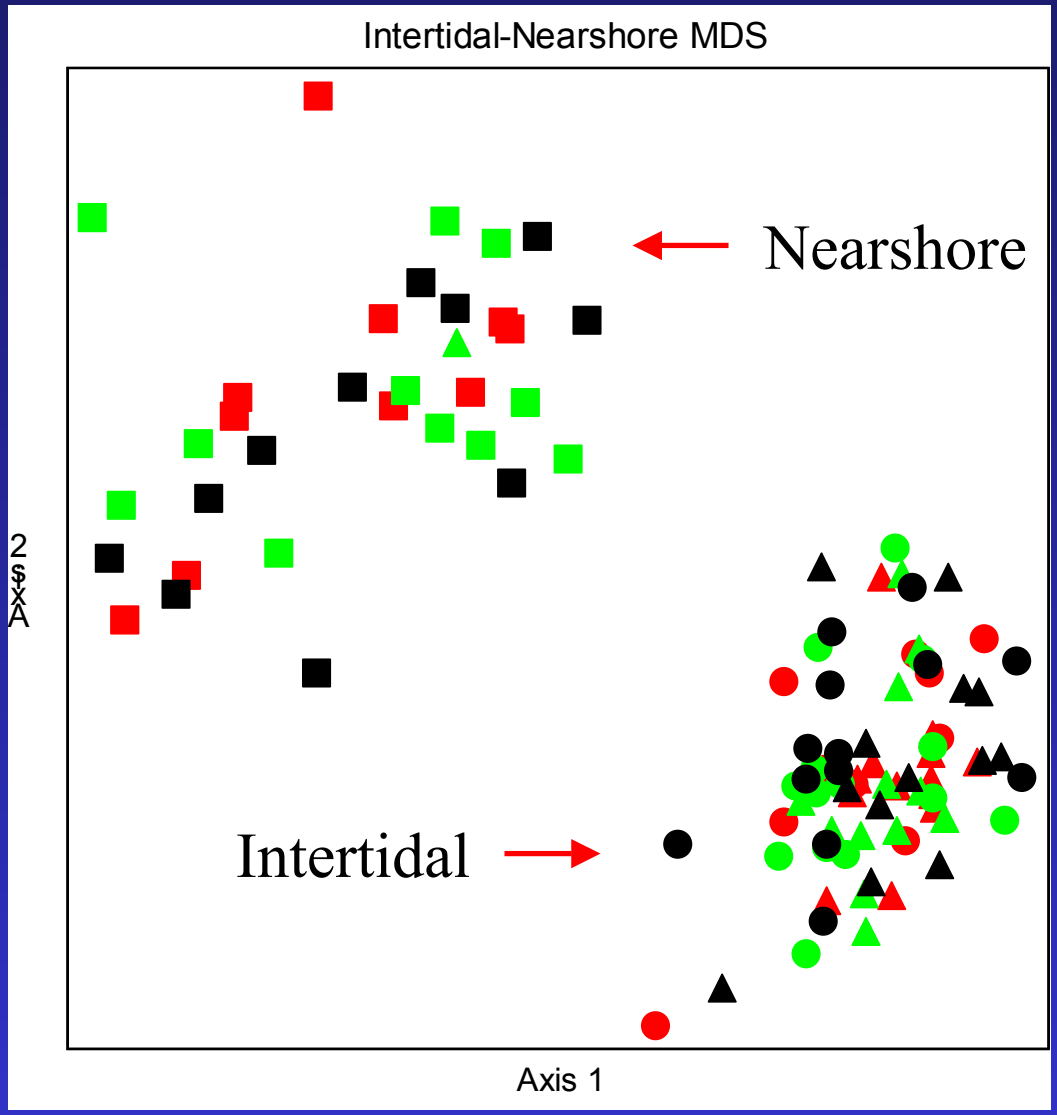
MLW Biomass


= North
= Middle
= South
Log Biomass (g/m2)
10^4
10^3
10^2
10^1
10^0
May 94
Sept 94
May 95
Sept 95
May 96
Sept 96
May 97
Sept 97
May 98
Sept 98
May 99
Sept 99
May 00

Nearshore Biomass

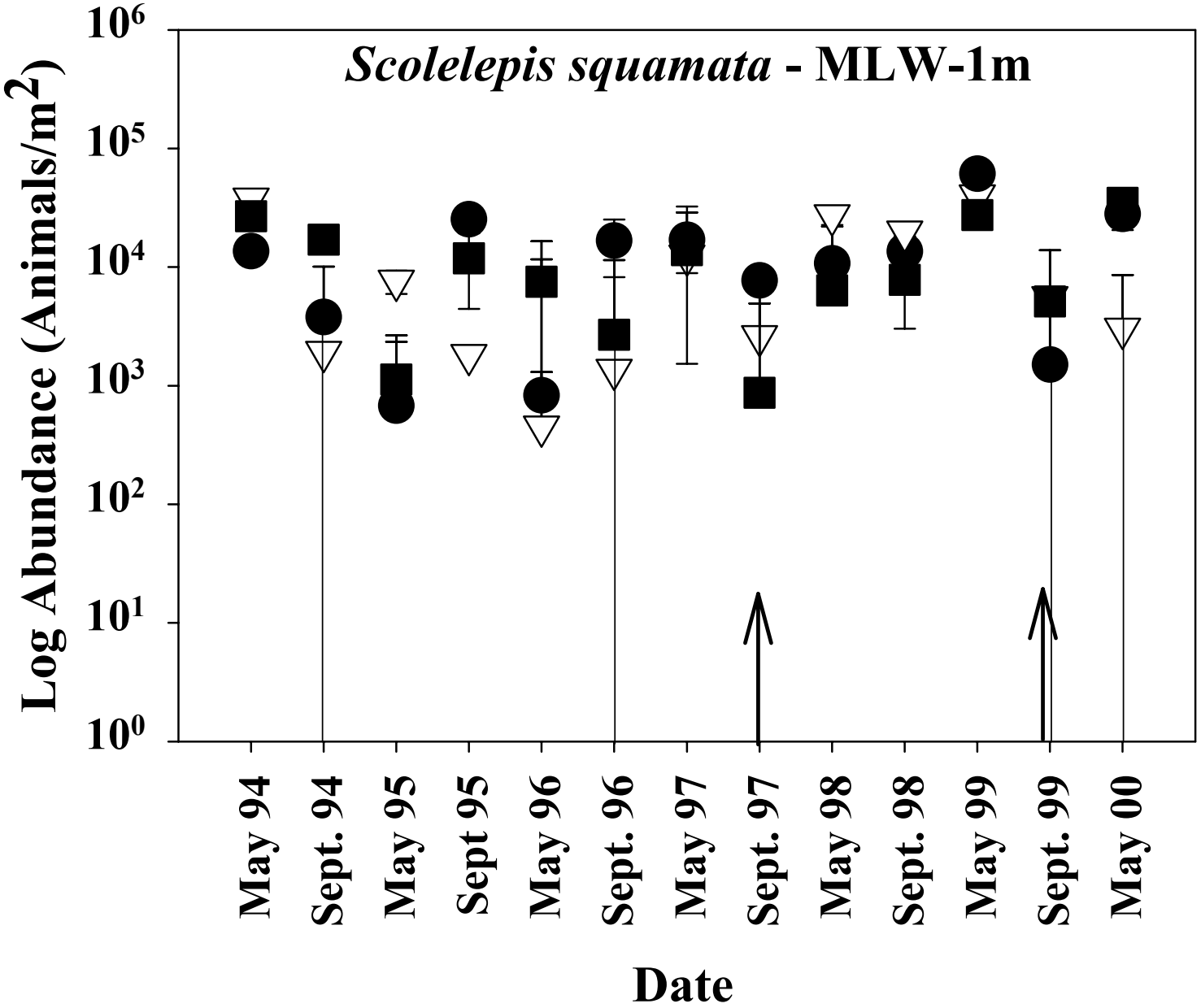


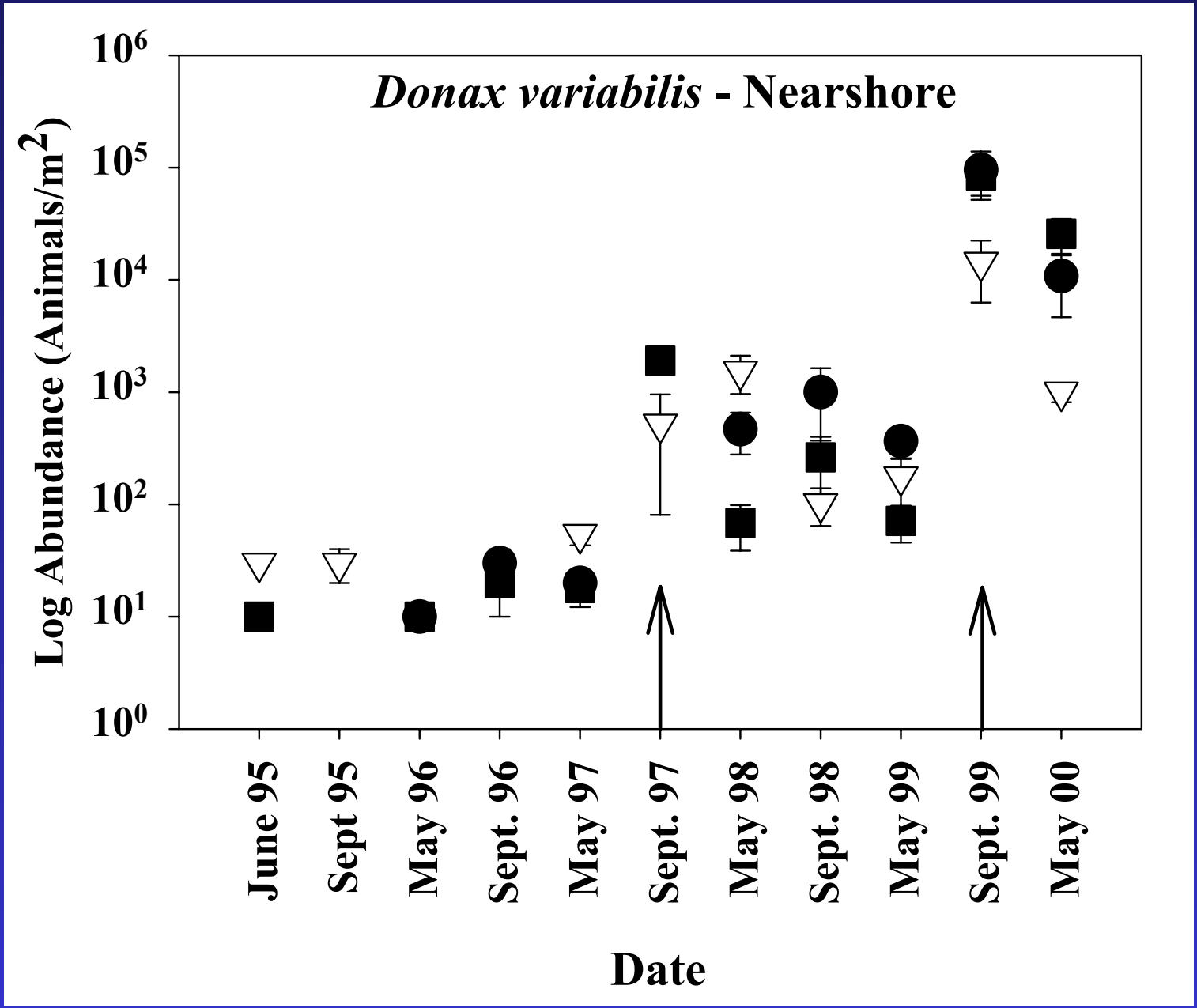
Intertidal-Nearshore NMDS Results



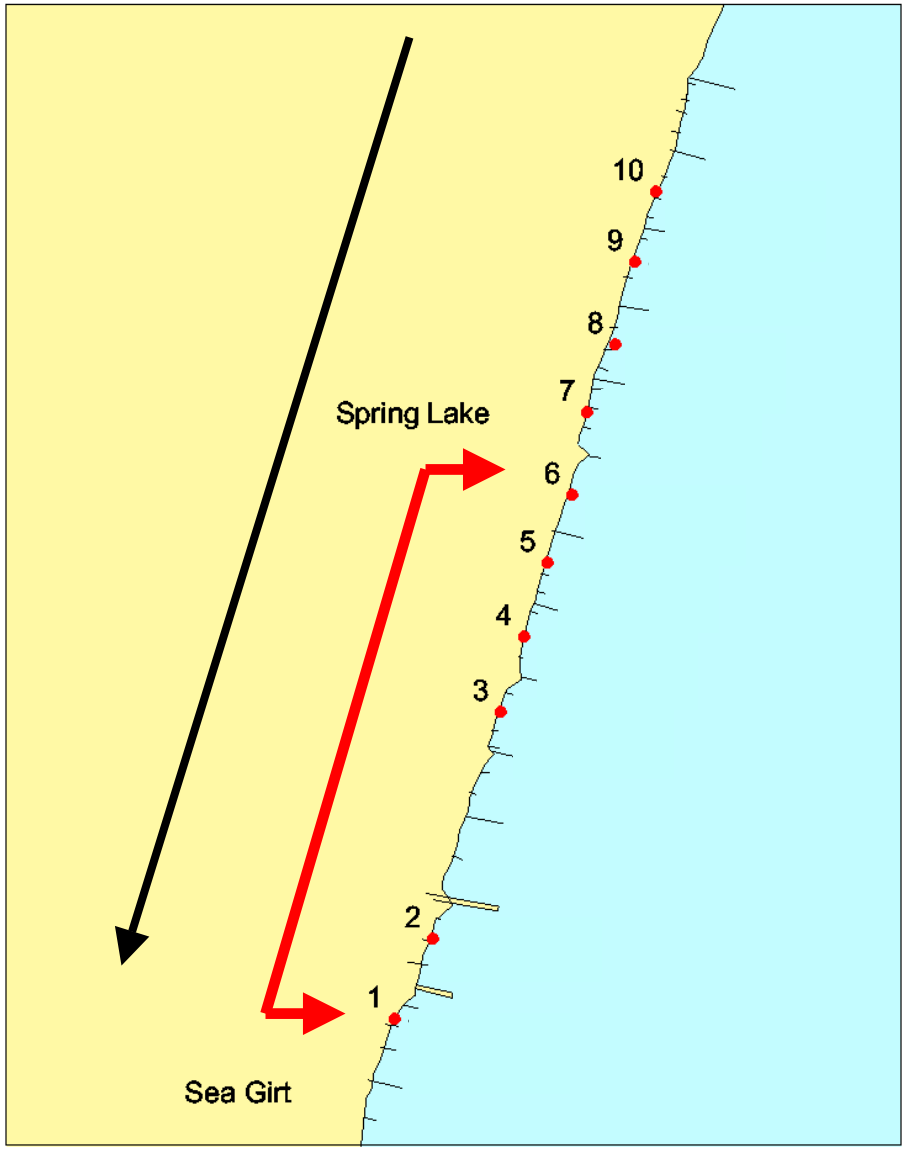
= North
= Middle
= South

Taxa	Intertidal	Nearshore
Rhynchocoela (LPIL)	51.44	x
Scolelepis squamata	34.87	x
Oligochaeta (LPIL)	8.32	x
Mytilus edulis	1.60	0.92
Protodriloides (LPIL)	0.82	
Corophium tuberculatum	0.45	
Microphthalmus (LPIL)	0.42	
Emerita talpoida	0.38	x
Microphthalmus sp. G	0.36	
Microphthalmus aberrans	0.22	
Polygordius (LPIL)	0.16	
Donax variabilis	X	74.84
Magelona papillicornis		5.75
Tellina agilis		3.60
Spisula solidissima		2.11
Acanthohaustorius millsi		2.03
Psammonyx nobilis		1.94
Ampharetidae (LPIL)		1.88
Asabellides oculata		1.33
Dispio uncinata		0.98

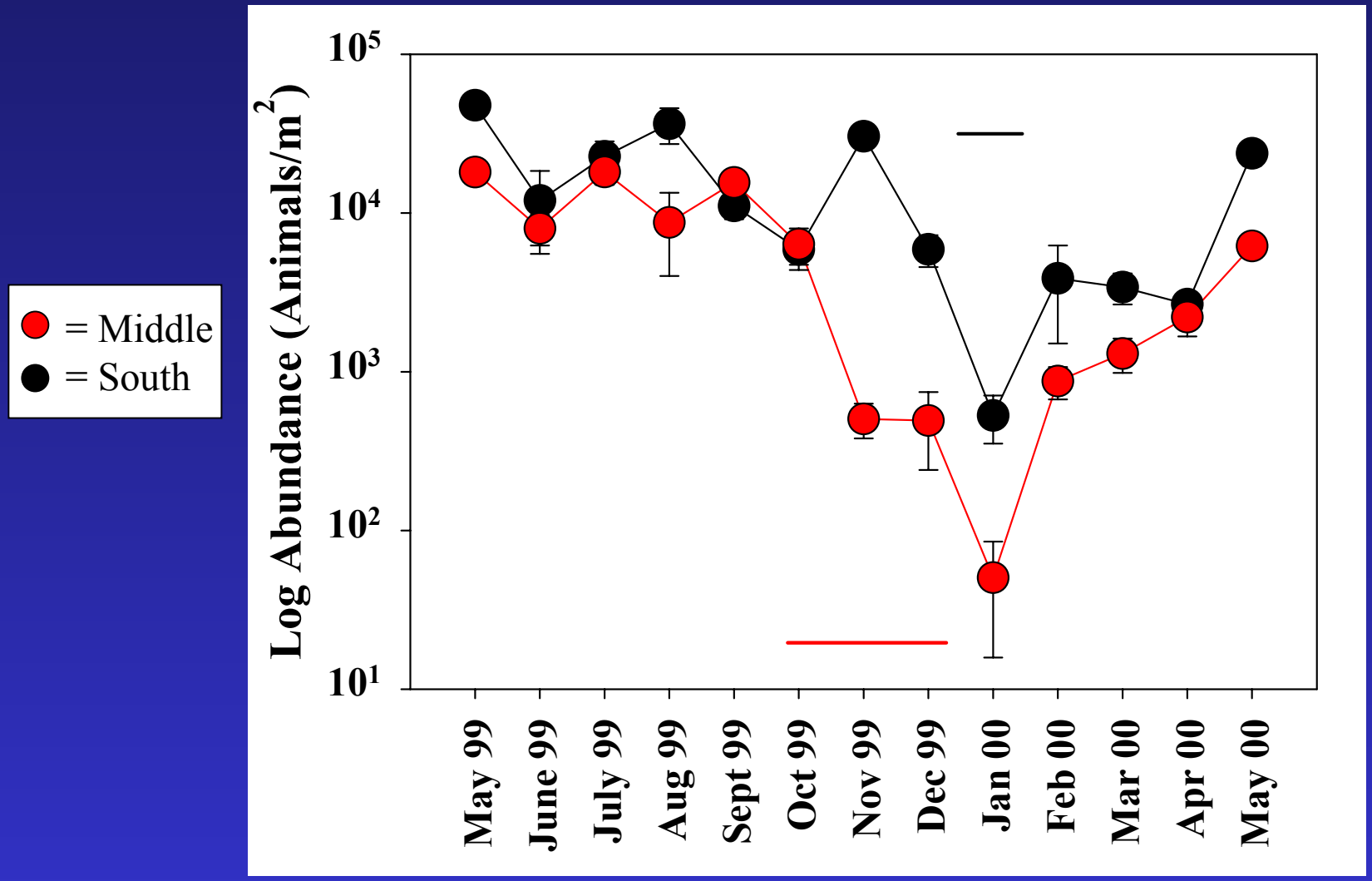

Scolelepis squamata - MLW-1m
Log Abundance (Animals/m2)
10^6
10^5
10^4
10^3
10^2
10^1
10^0
May 94
Sept. 94
May 95
Sept 95
May 96
Sept. 96
May 97
Sept. 97
May 98
Sept. 98
May 99
Sept. 99
May 00
Date


Donax variabilis - Nearshore
Log Abundance (Animals/m^2)
10^6
10^5
10^4
10^3
10^2
10^1
10^0
June 95
Sept 95
May 96
Sept. 96
May 97
Sept. 97
May 98
Sept. 98
May 99
Sept. 99
May 00
Date

Monthly Benthic Stations - South Area



Monthly Abundance (1999-2000)



Recovery Estimates

Area	Year	Parameter	Days	p	r^2
South	1997	Abundance	49	0.006	0.63
		Biomass	38	0.015	0.55
		Taxa Richness	23	<0.001	0.63
Middle	1999	Abundance	189	<0.001	0.24
		Biomass	176	<0.001	0.26
		Taxa Richness	178	<0.001	0.36

BMP RESULTS

Intertidal Sediments and Benthos

- Intertidal benthos similar to other mid-Atlantic sandy beach infauna
- Infaunal recovery within 2 months in 1997
- Impact in 1999-2000 longer lasting (6.5 mo. recovery) but abundances & biomass no lower than previous reference area values
- No long-term impacts
- No long term change in sediment texture due to nourishment

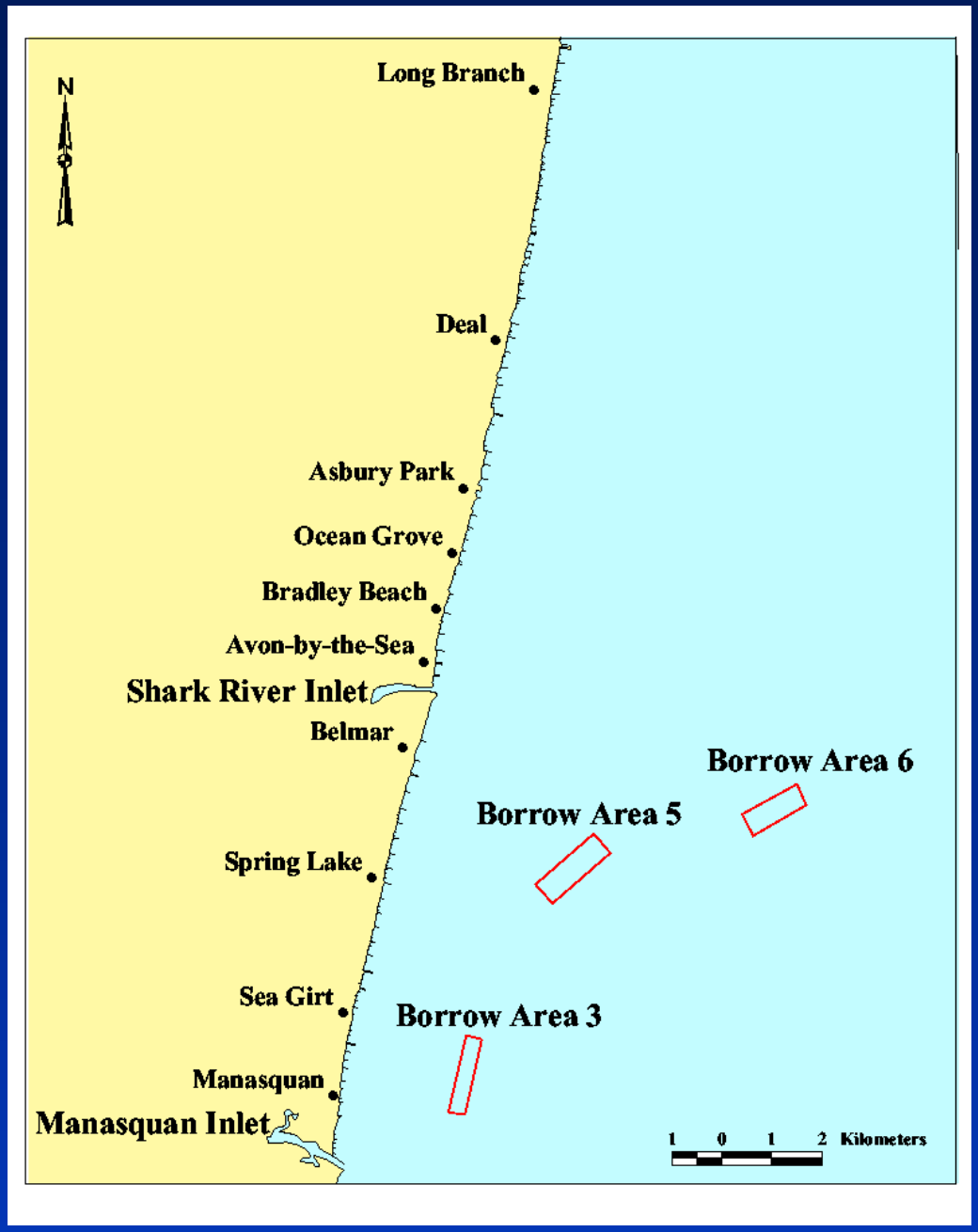
BMP RESULTS

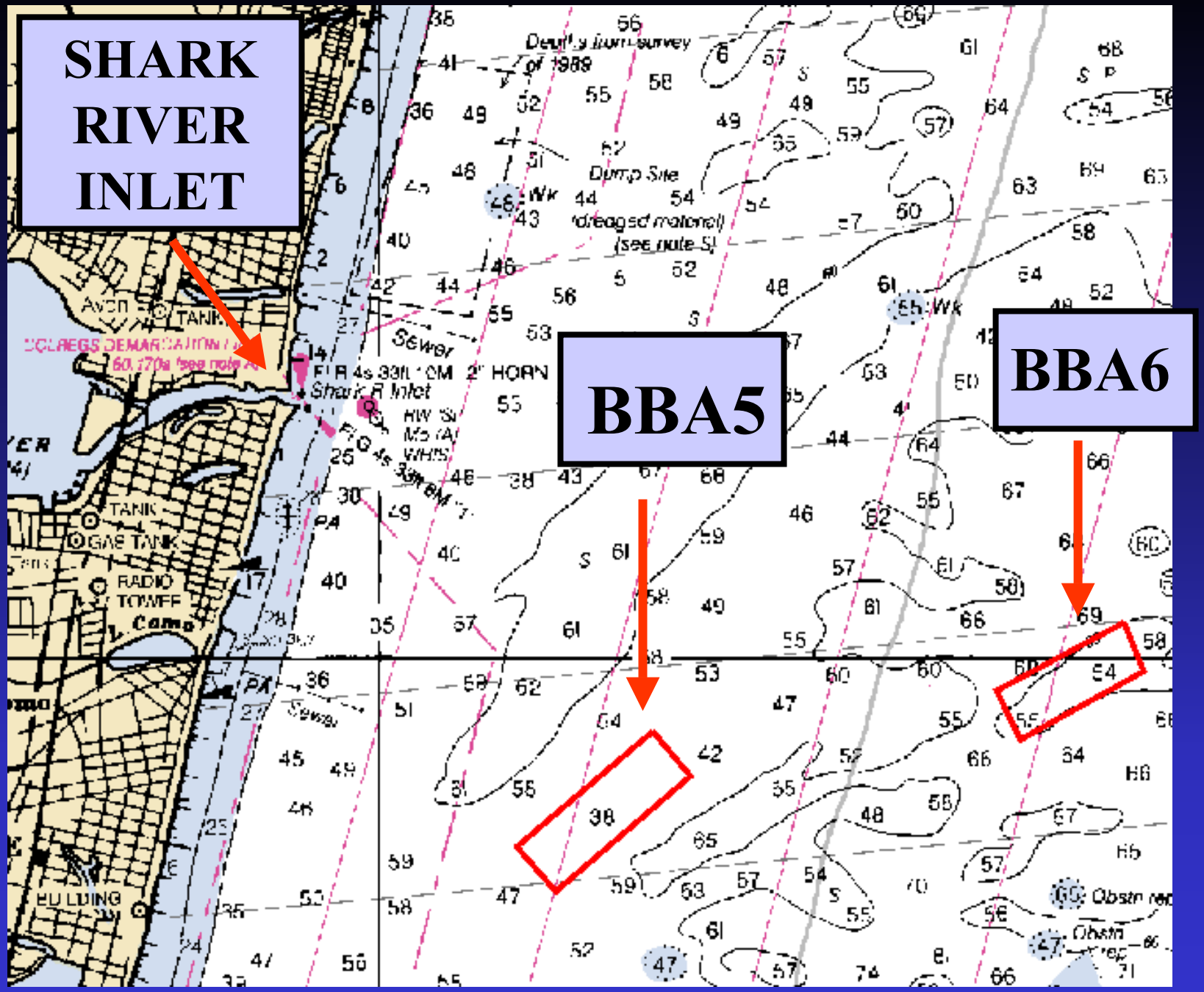
Nearshore Sediments and Benthos

- Benthos composed of elements of both intertidal and offshore fauna
- No apparent impacts to infauna in 1997
- Short-term impacts apparent in 1999 but levels no lower than previous reference area values
- No long-term impacts to infauna
- No change in sediment texture

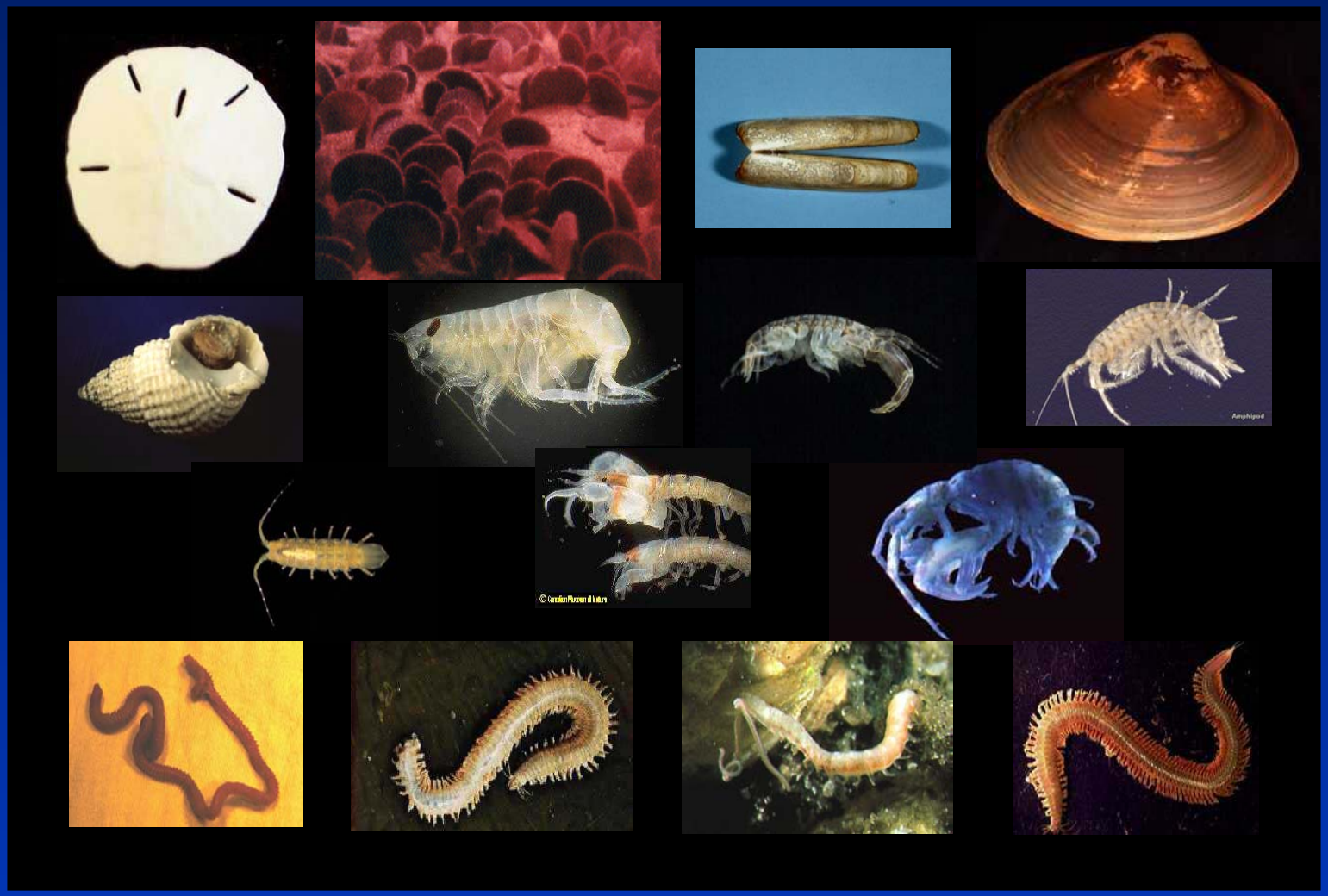
Offshore Borrow Area Benthos

Offshore Borrow Area Map

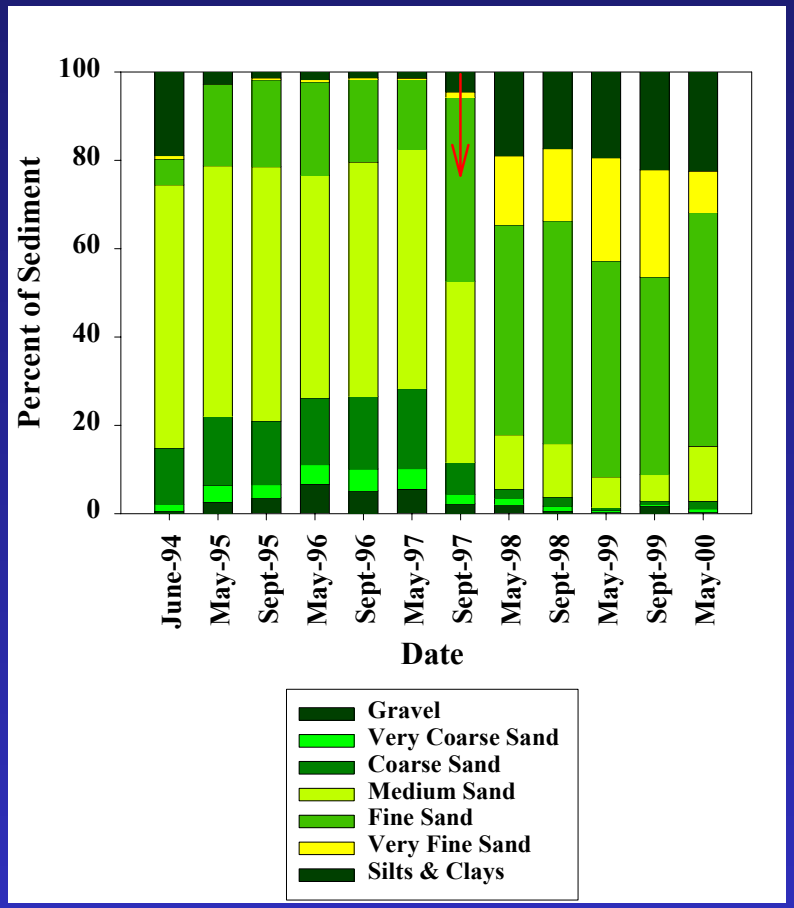



SHARK RIVER INLET
BBA5
BBA6
Dump Site
(dredged material)
(see note 5)
Shark R Inlet
Sewer
TANK
GAS TANK
RADIO TOWER
BUILDING

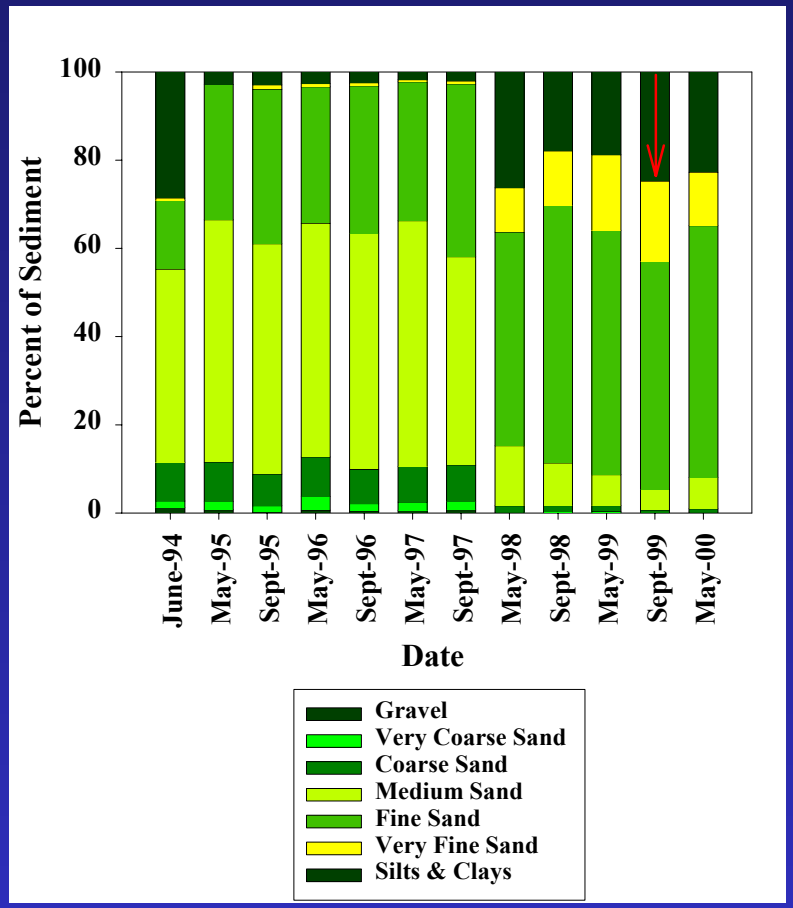
Offshore Infauna & Sediments



BBA6 & BBA5 Sediments

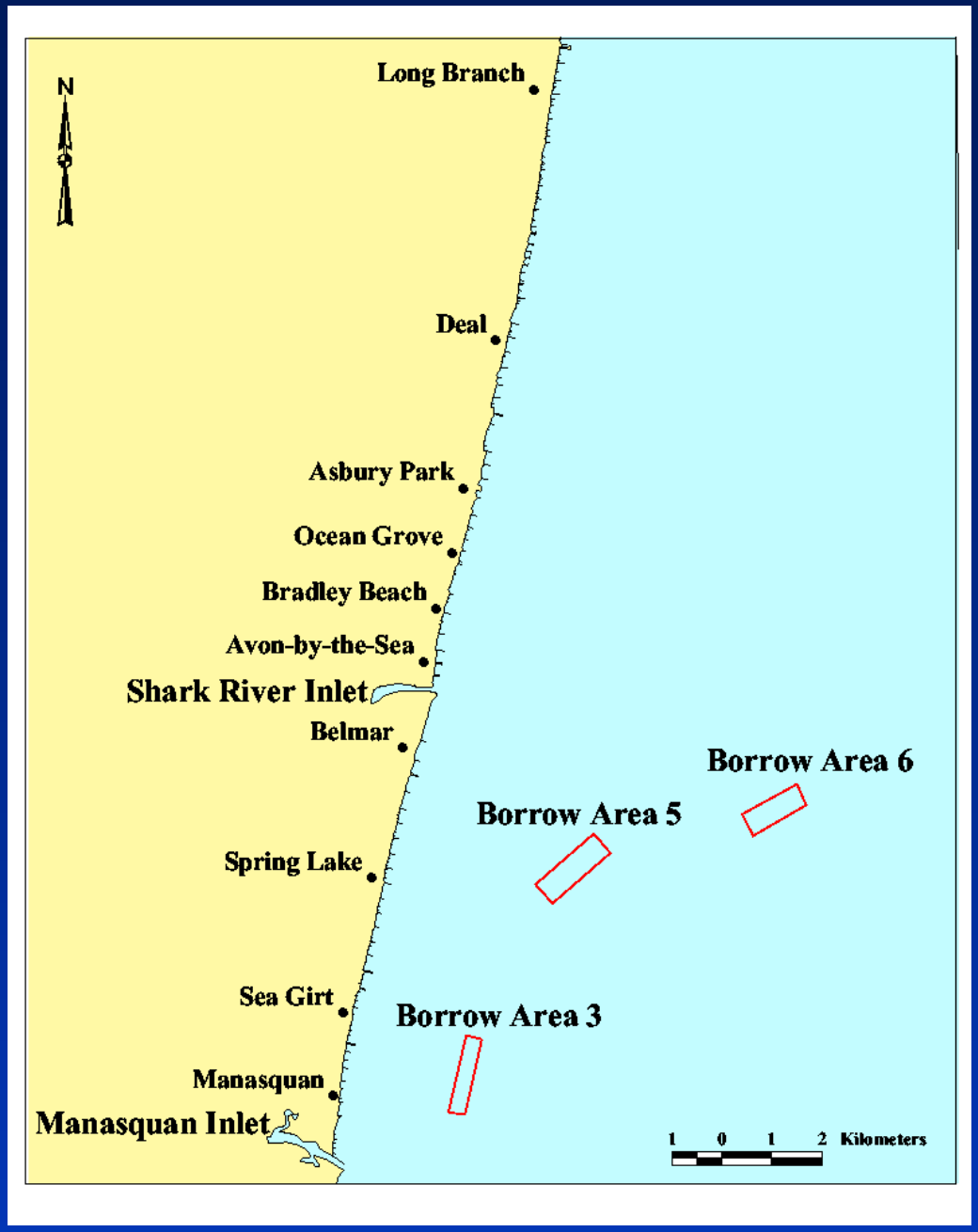


BBA6

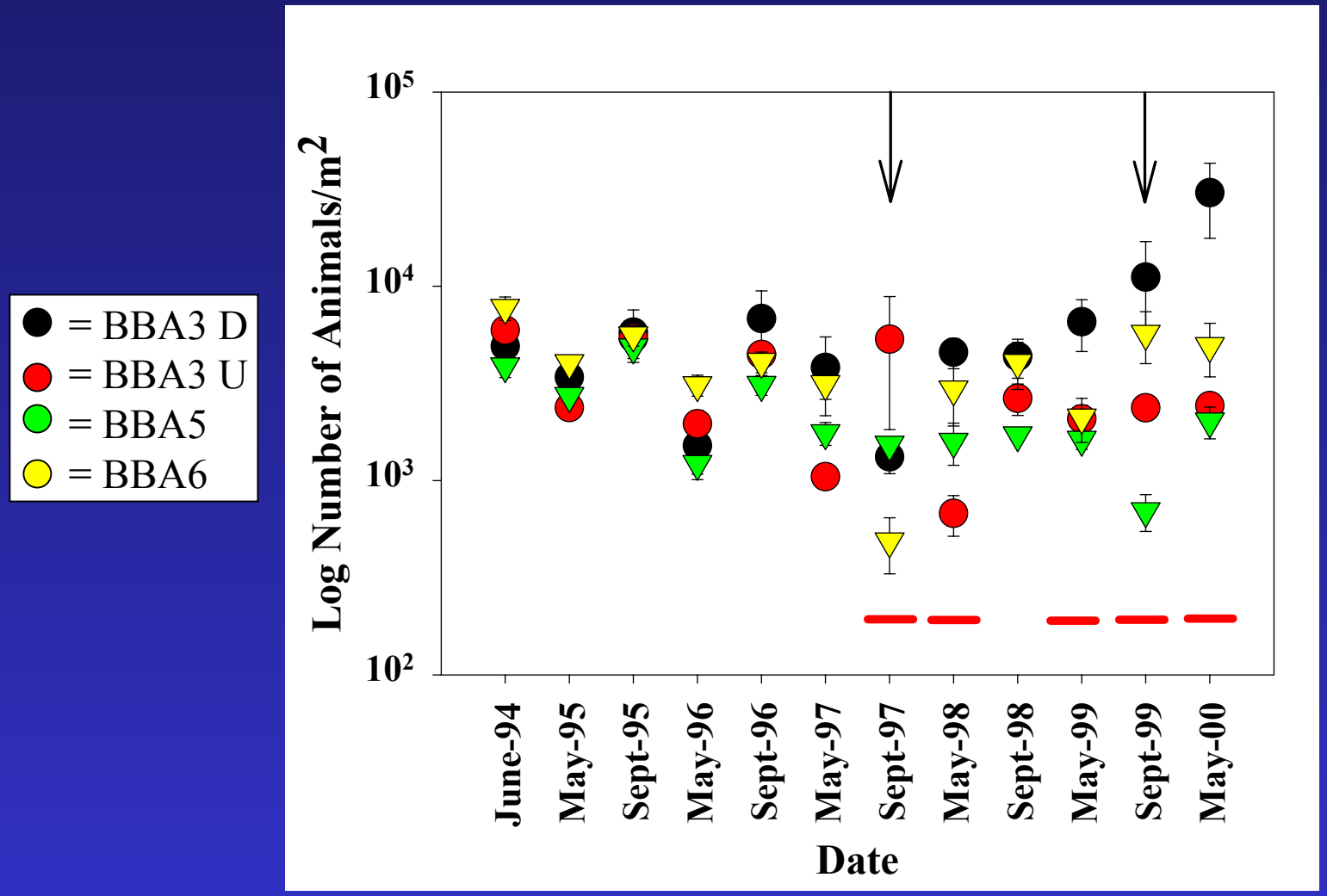


BBA5

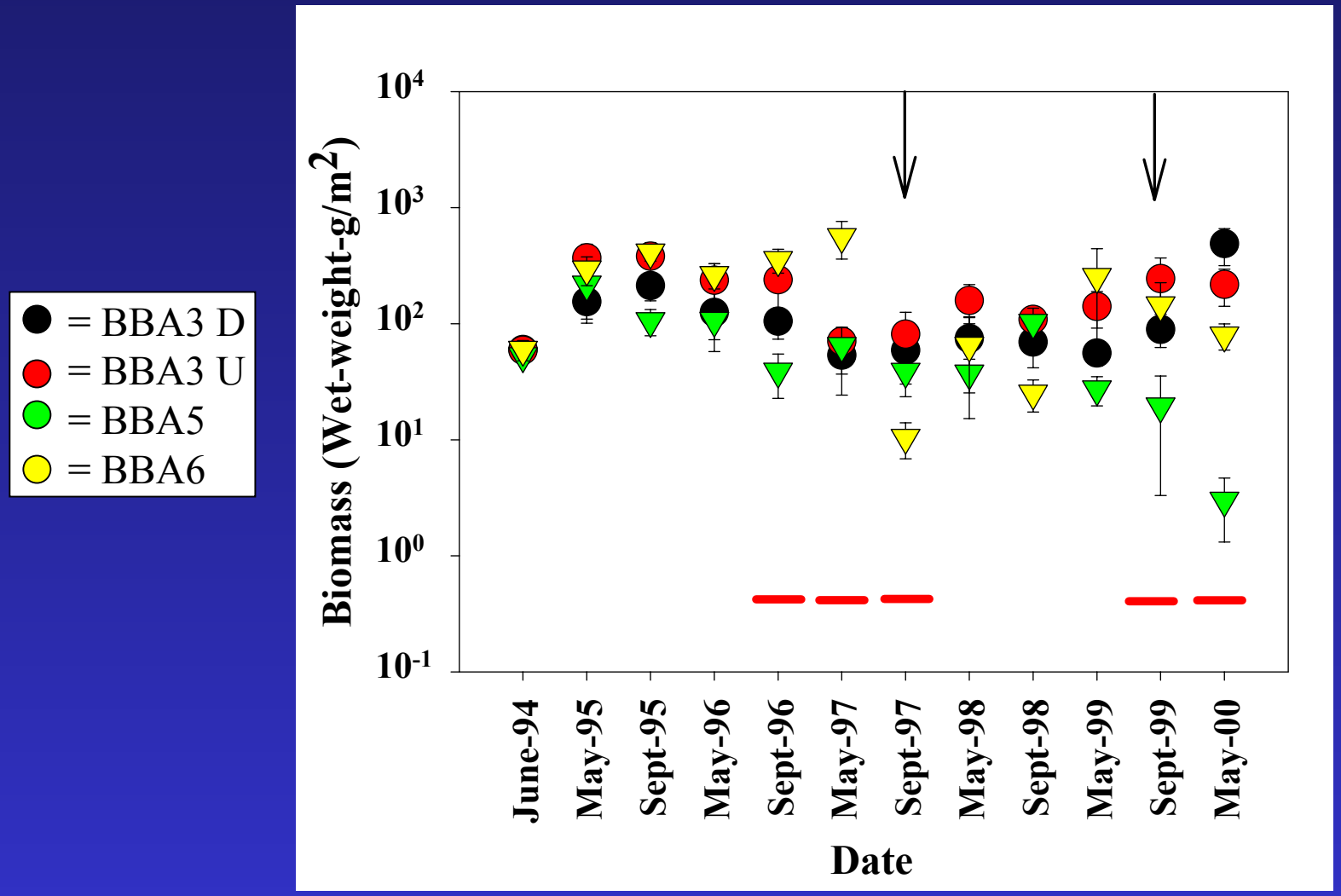
Offshore Borrow Area Map



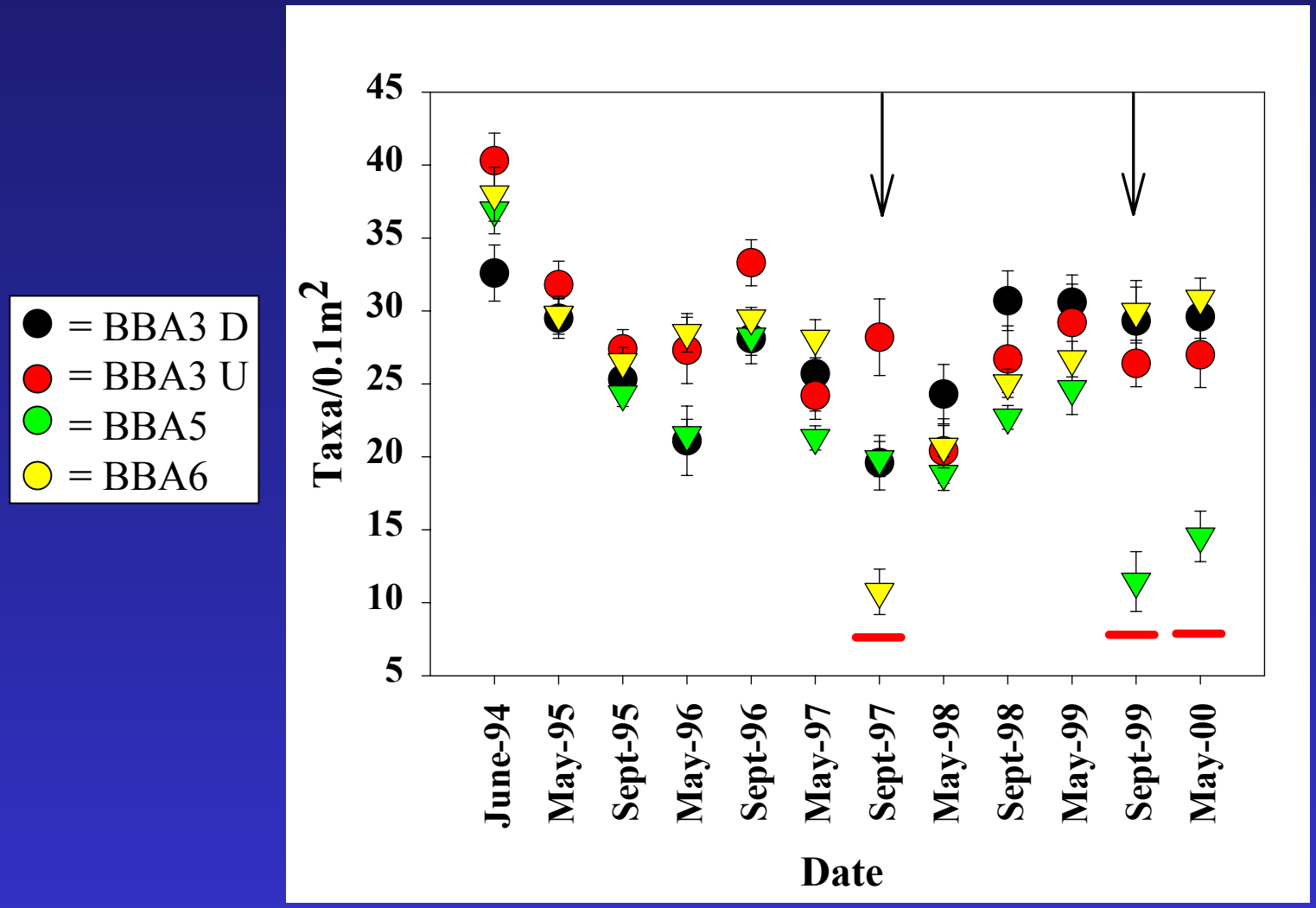
Total Abundance (No./m^2)



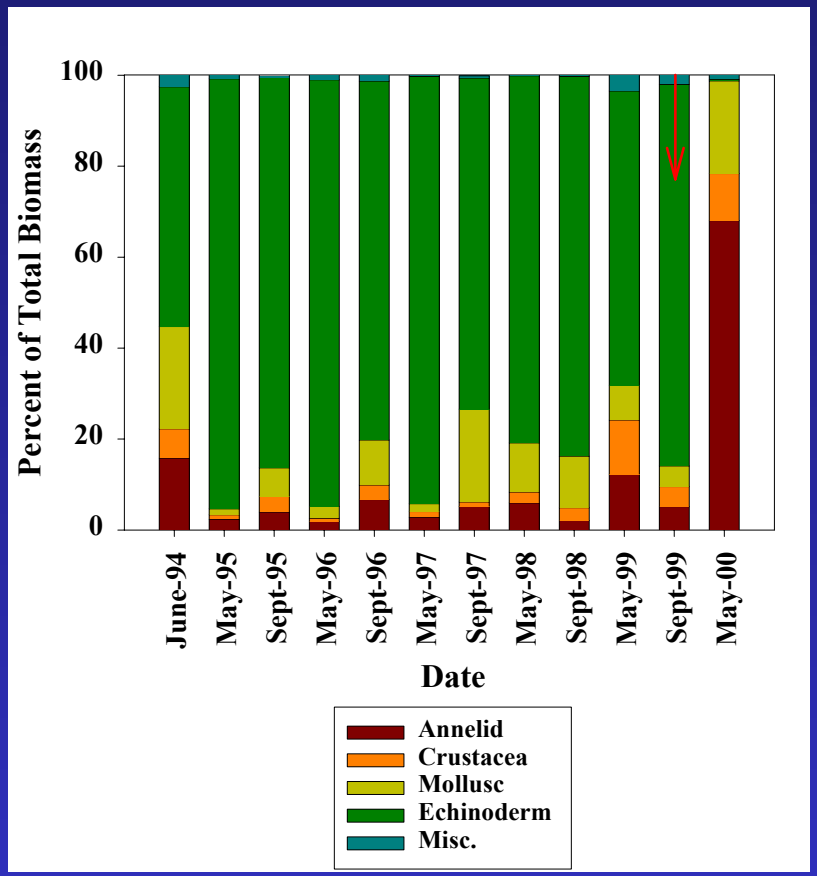
Total Biomass (g/m^2)

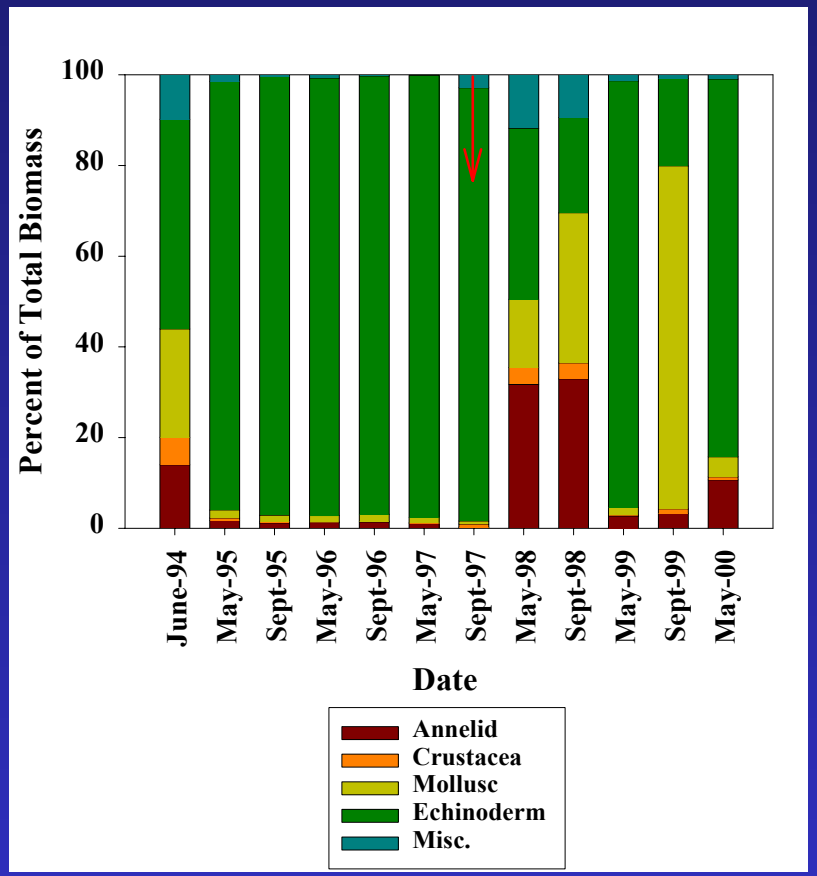


Taxa Richness



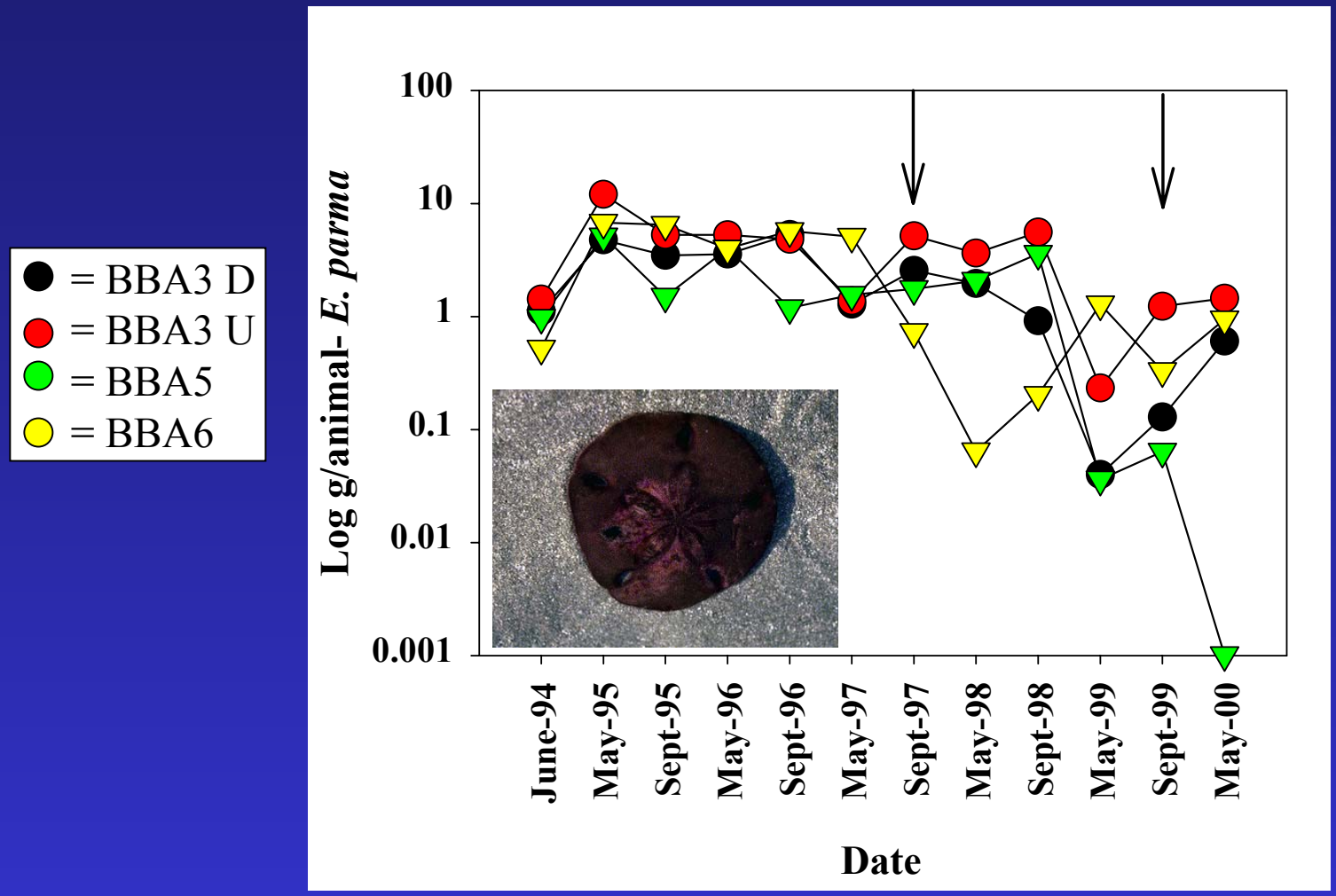
BBA5& BBA6 Biomass Composition





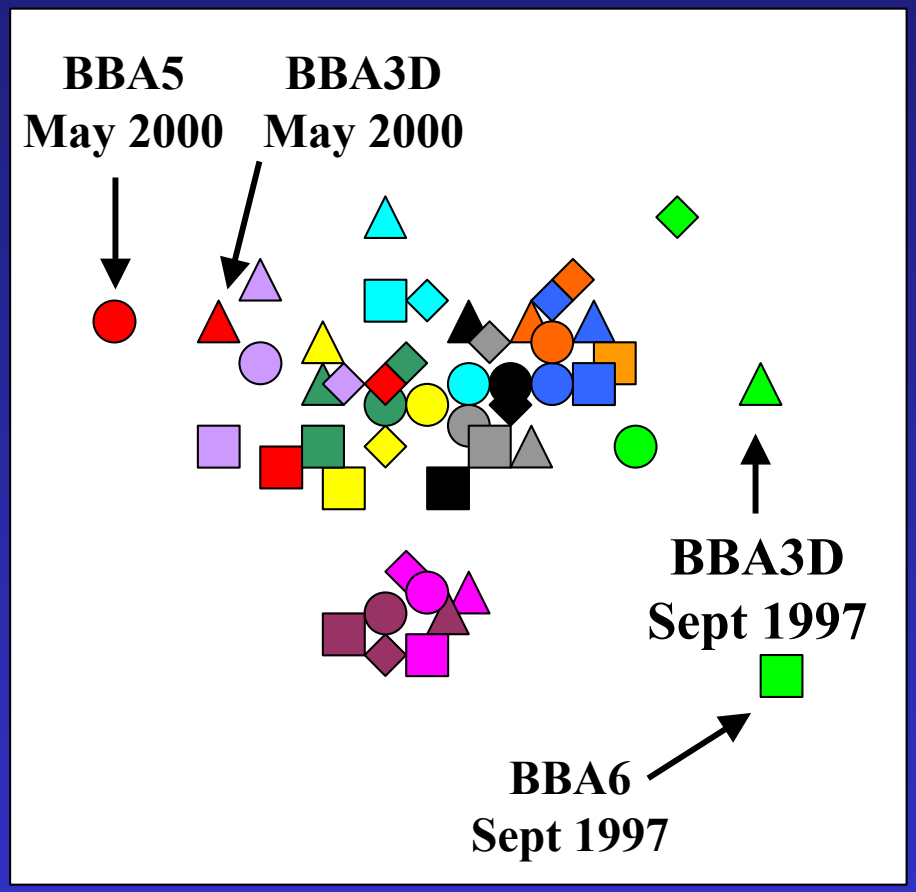
BBA5 **BBA6**

Sand Dollar Average Weight

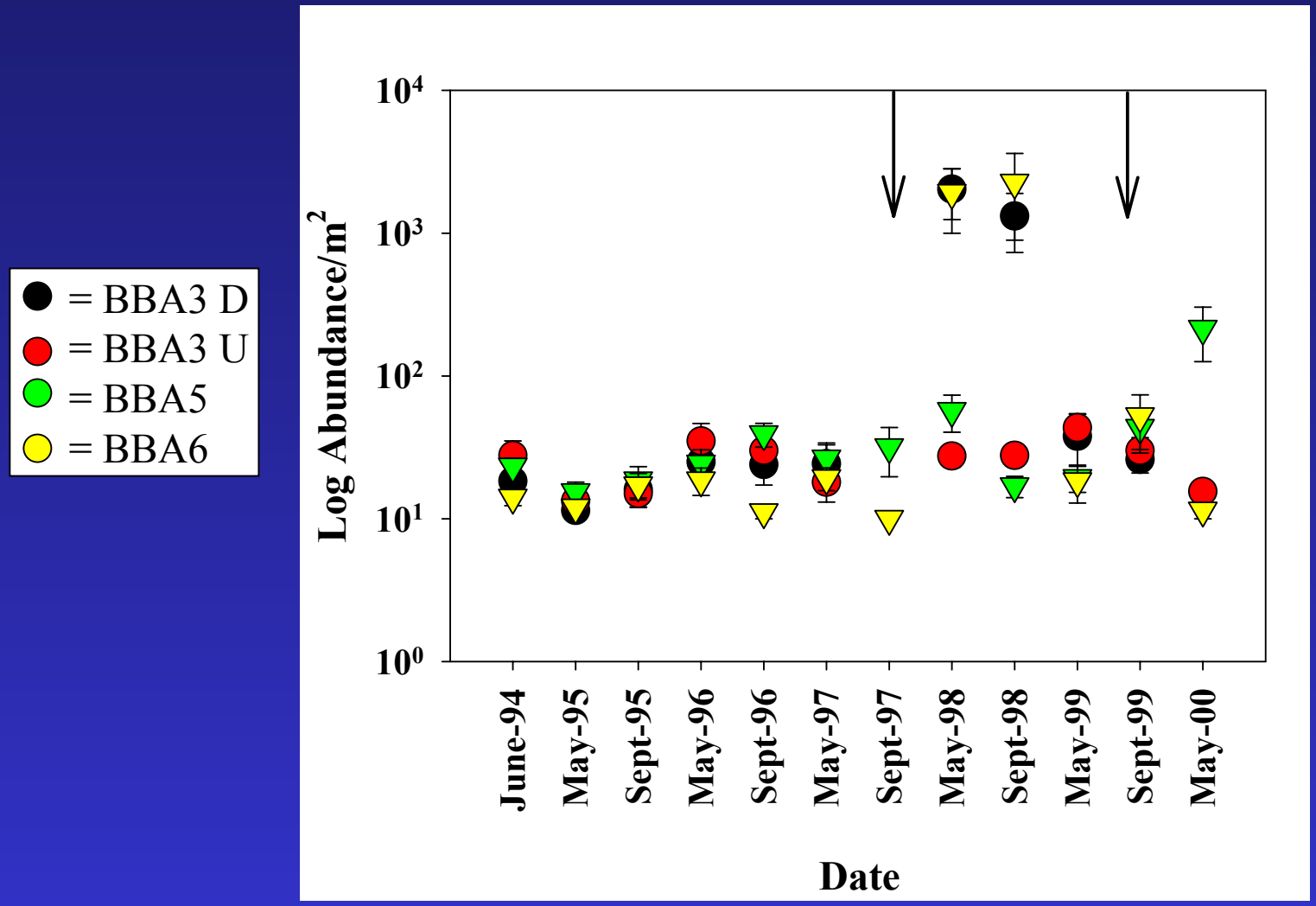


Borrow Area Infauna MDS Results

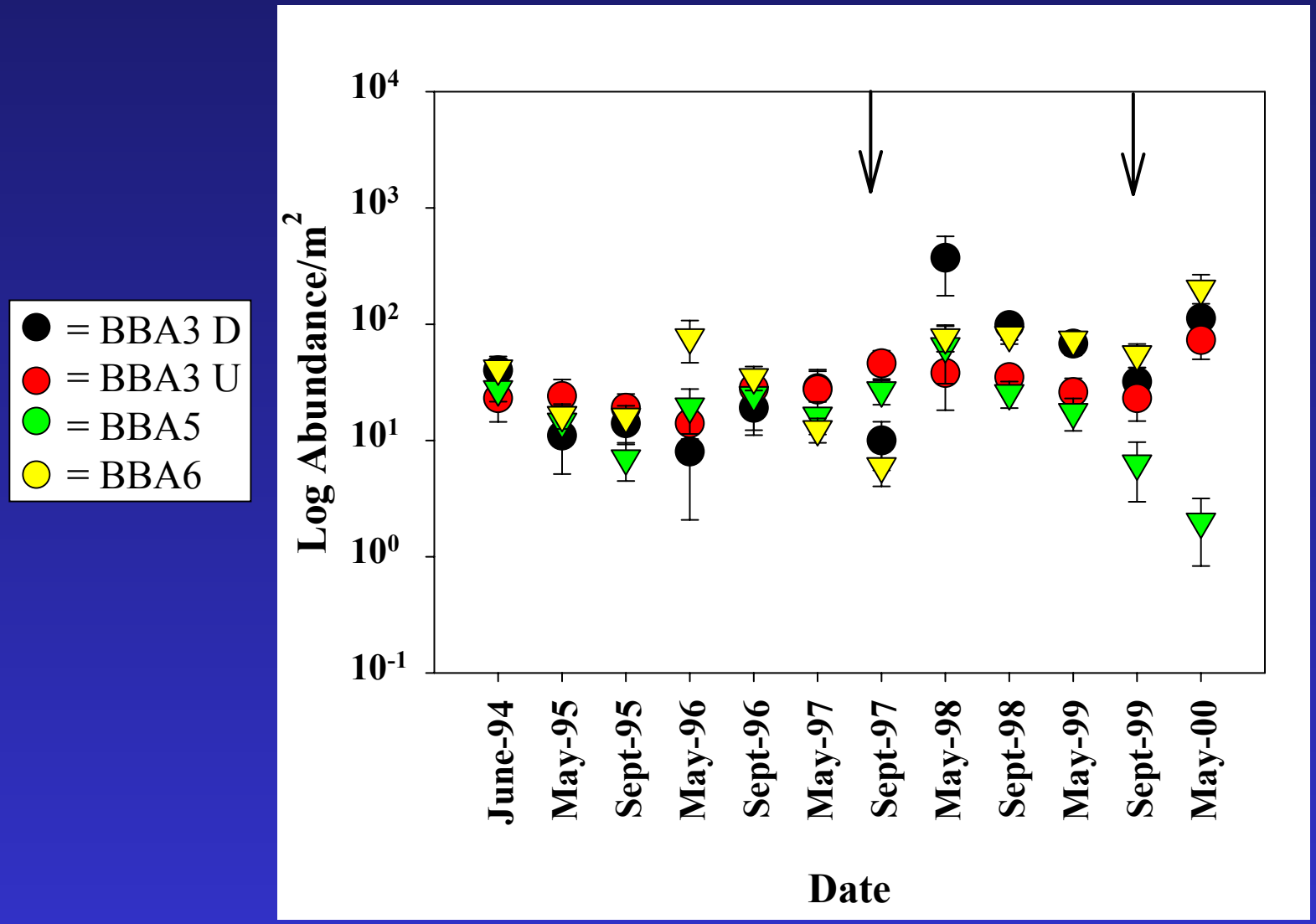
Stress = 0.17



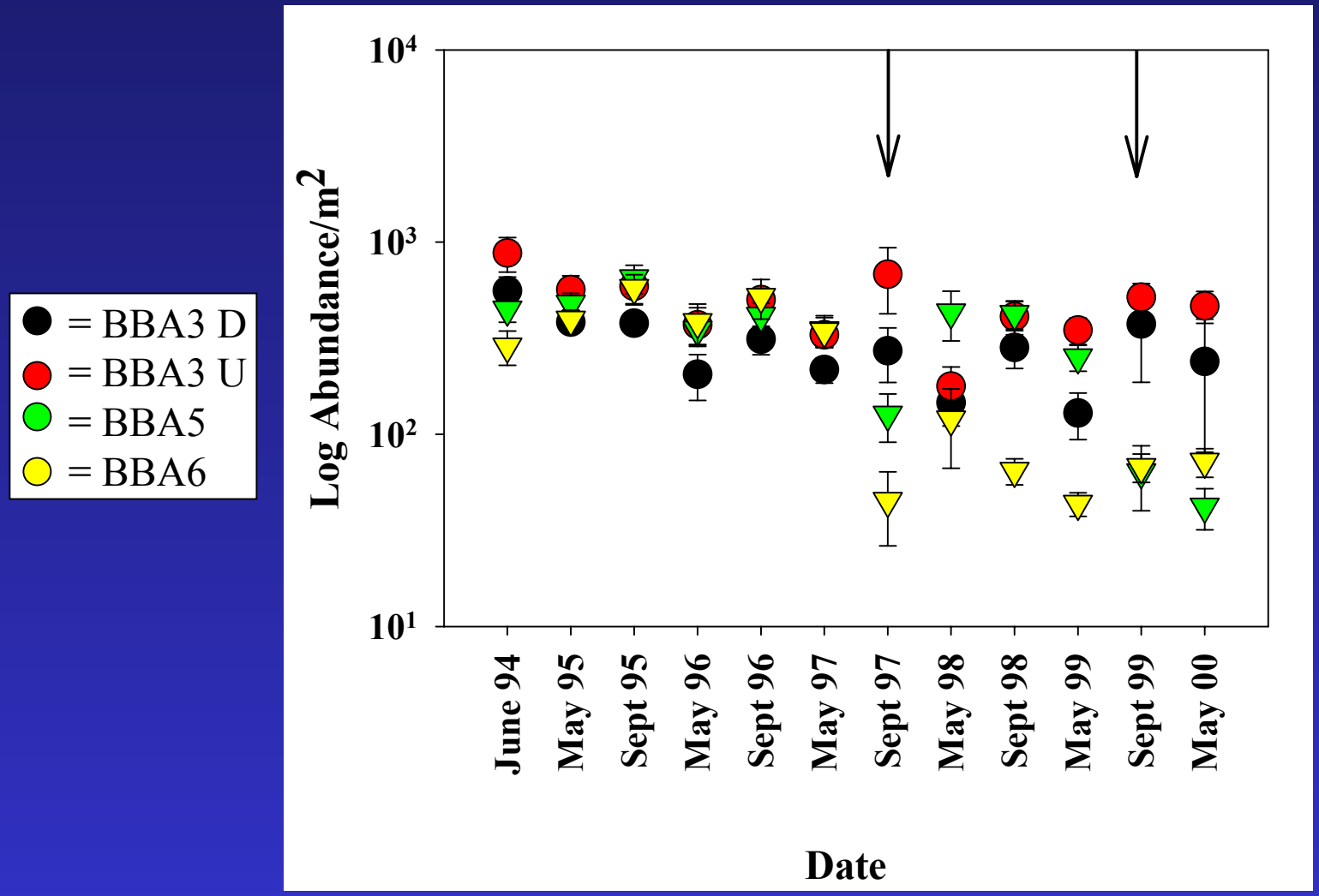
Spiophanes bombyx



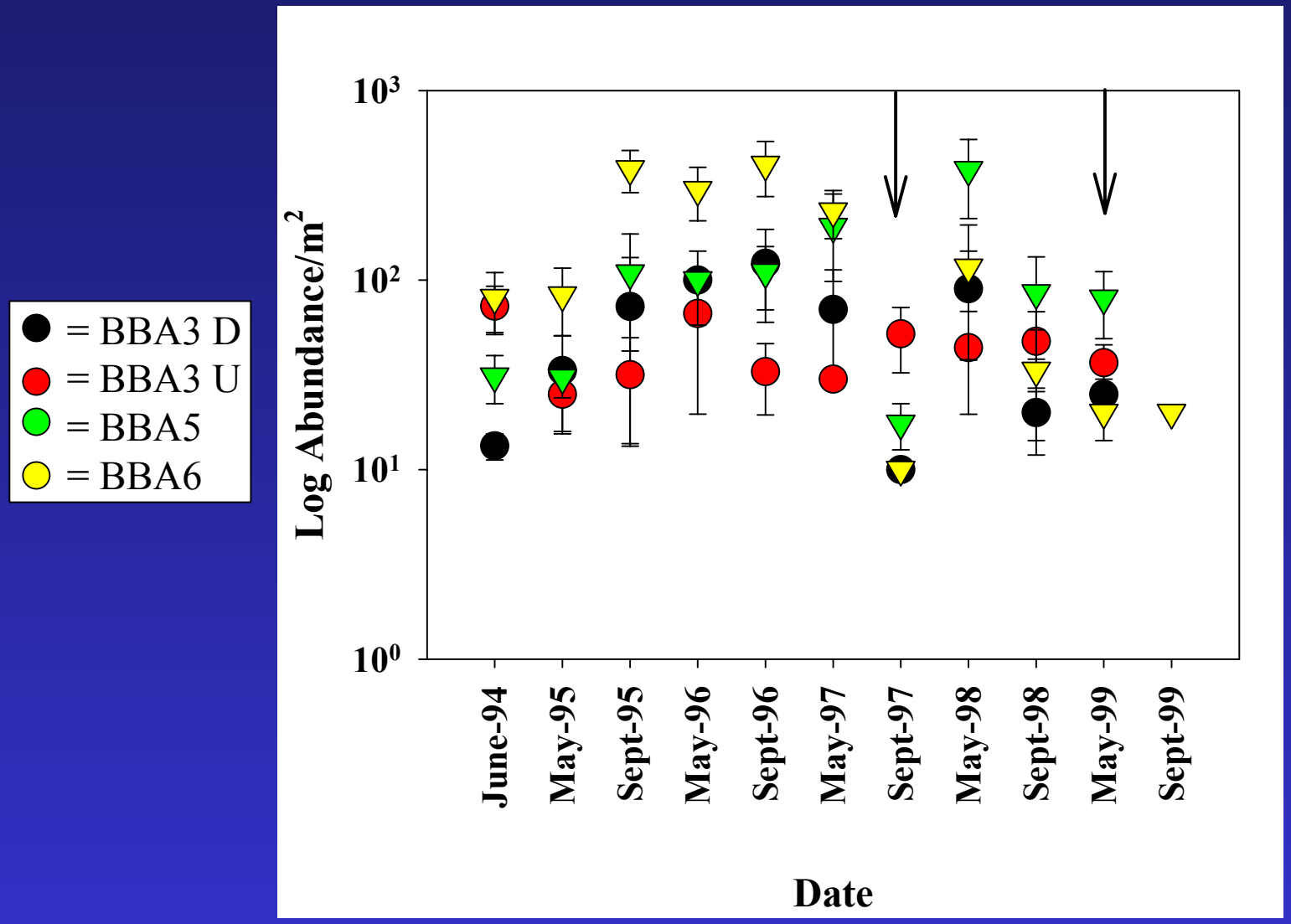
Rhynchocoela (LPIL)



Subsurface Deposit-Feeders



Oligochaeta (LPIL)



BMP RESULTS

Offshore Sediments and Benthos

- Sediment texture finer after dredging but probably not due to dredging activity
- Benthos typical mid-Atlantic medium sand assemblage
- Diversity and abundance depressed after 1997 dredging but recovered in 8 months
- Biomass recovered in 2 years (after 1997)
- Recovery trend in 1999 similar to 1997