

	29	
	1955 2013	
<p>Normalized biomass size spectrum (NBSS) 1955 2013</p> <p>59 (NORPAC net )</p> <p>2 8 (1968 1969 1982</p> <p>1983 1995 1996 2003 2004 ) (165°W 166°W )</p> <p>ZooScan</p> <p>1955 2013 6 7 - 8 20 1286</p> <p>(Fig.1, Table 1) 333-335 µm 45 cm NORPAC net ( 150 m</p> <p>) 150 m ( 150 m )</p> <p>5% 2</p> <p>8 ZooScan ( 1/2-1/16)</p> <p>NBSS 165°W 166°W</p> <p>8 NBSS (PDO NPI</p>		

) (analysis of variance: ANOVA) NBSS

(PDO

) Structural Equation Modeling (SEM)

middle shelf outer shelf

middle shelf NPI 4

outer shelf

3

middle domain 1975

(1955 1975 ) 1976 2013

/ (p=0.02)

NBSS inner

shelf outer shelf NBSS

NBSS middle shelf inner shelf NBSS -1

1969 1983 1995 1996 middle-inner shelf

-1 inner front

*C. marshallae*

NBSS

-1 *Acartia* spp. *Pseudocalanus* spp.

NBSS

NBSS 1968/1969 2003/2004

NBSS PDO

NPI

2003/04 inner

middle shelf NBSS inner middle shelf

2003/04 57 °N

2004

middle shelf