

Figure 3-1. Ichthyoplankton sampling locations in northern New Jersey from 1995 to 1999. Surfzone sites are numbered from 1-22 while nearshore sites have an alpha-numeric designation.

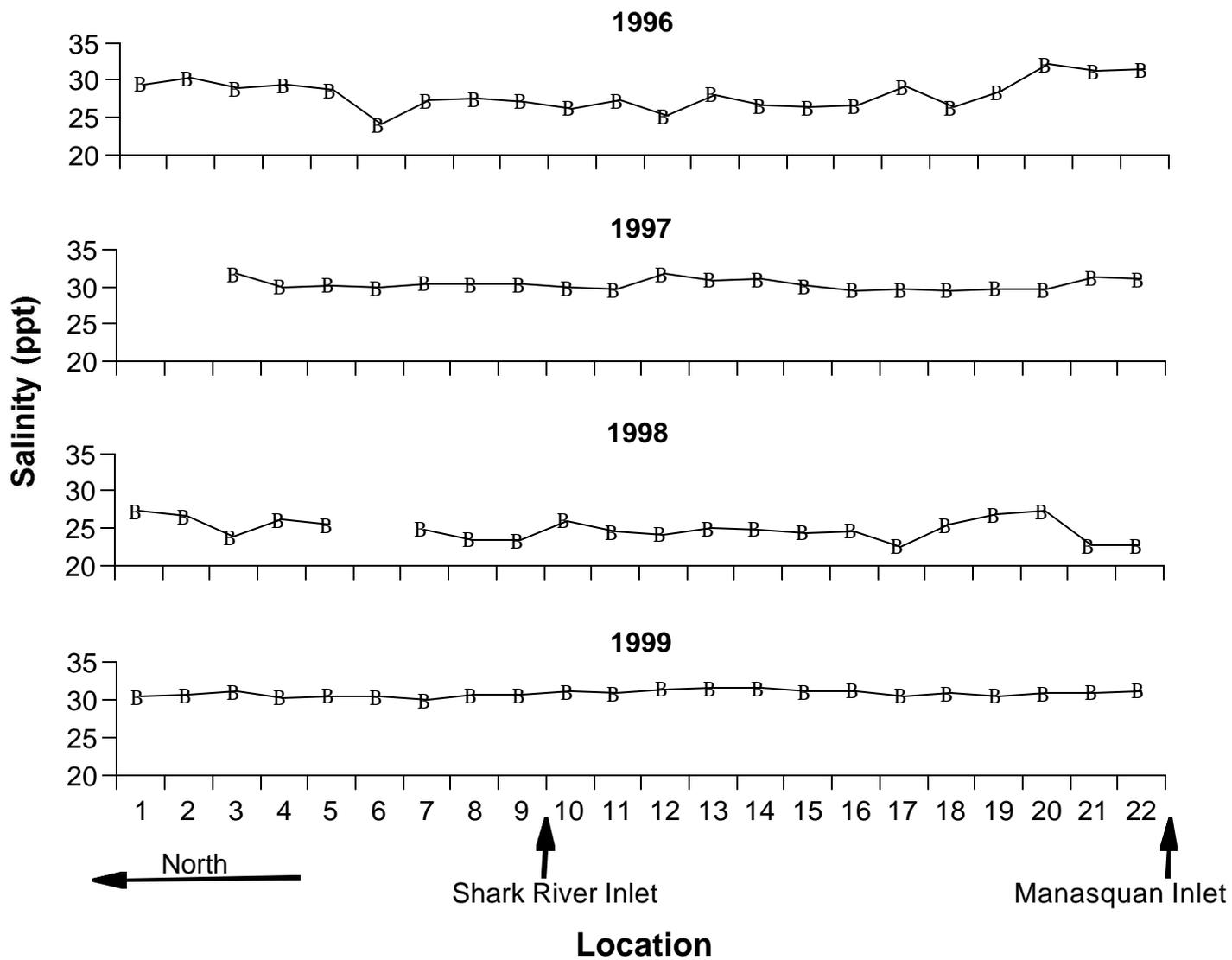


Figure 3-2. Average salinity (ppt) by study site (see Fig. 3-1) for ichthyoplankton sites in northern New Jersey.

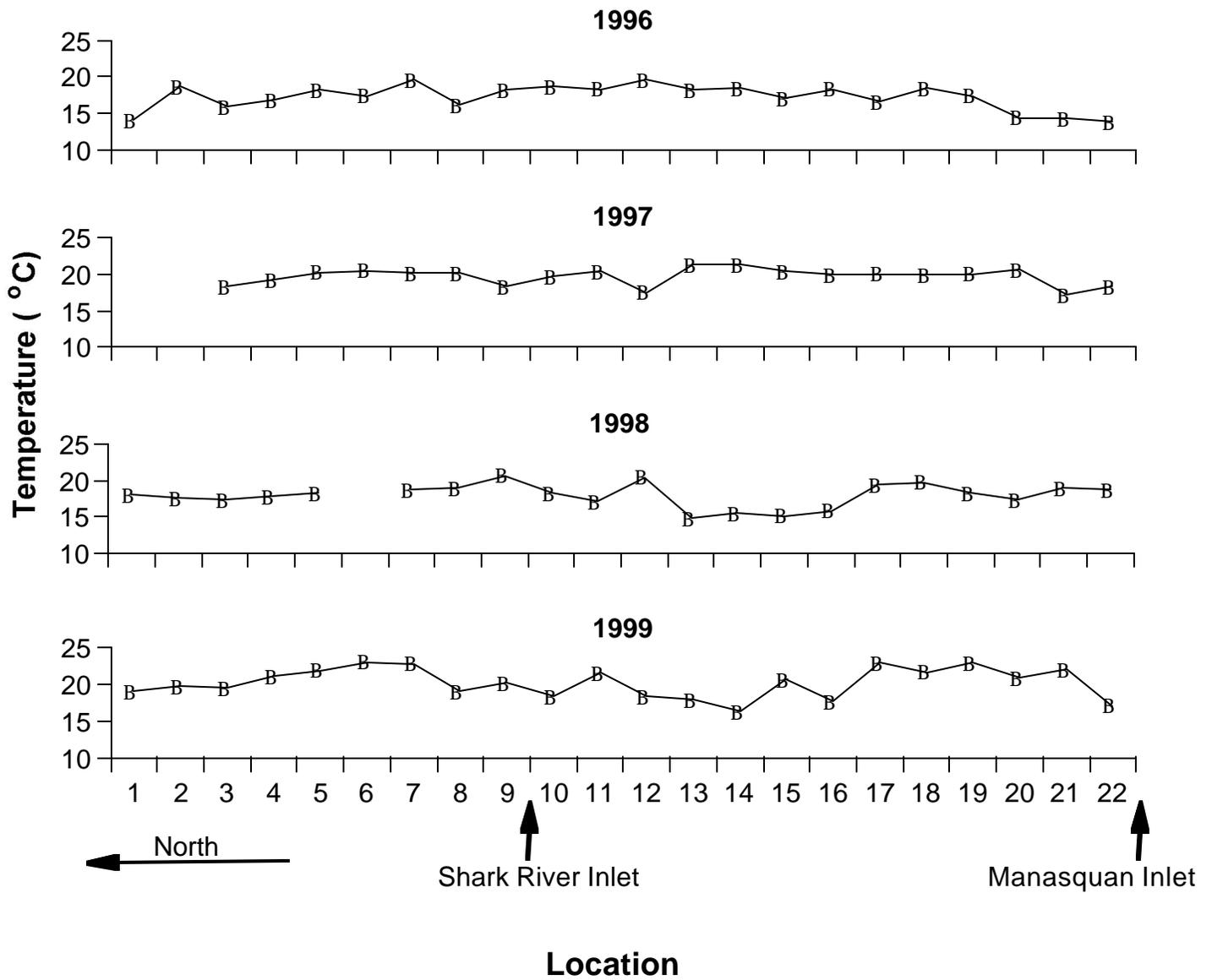


Figure 3-3. Average temperature (°C) by study site (see Fig. 3-1) for ichthyoplankton sites in northern New Jersey.

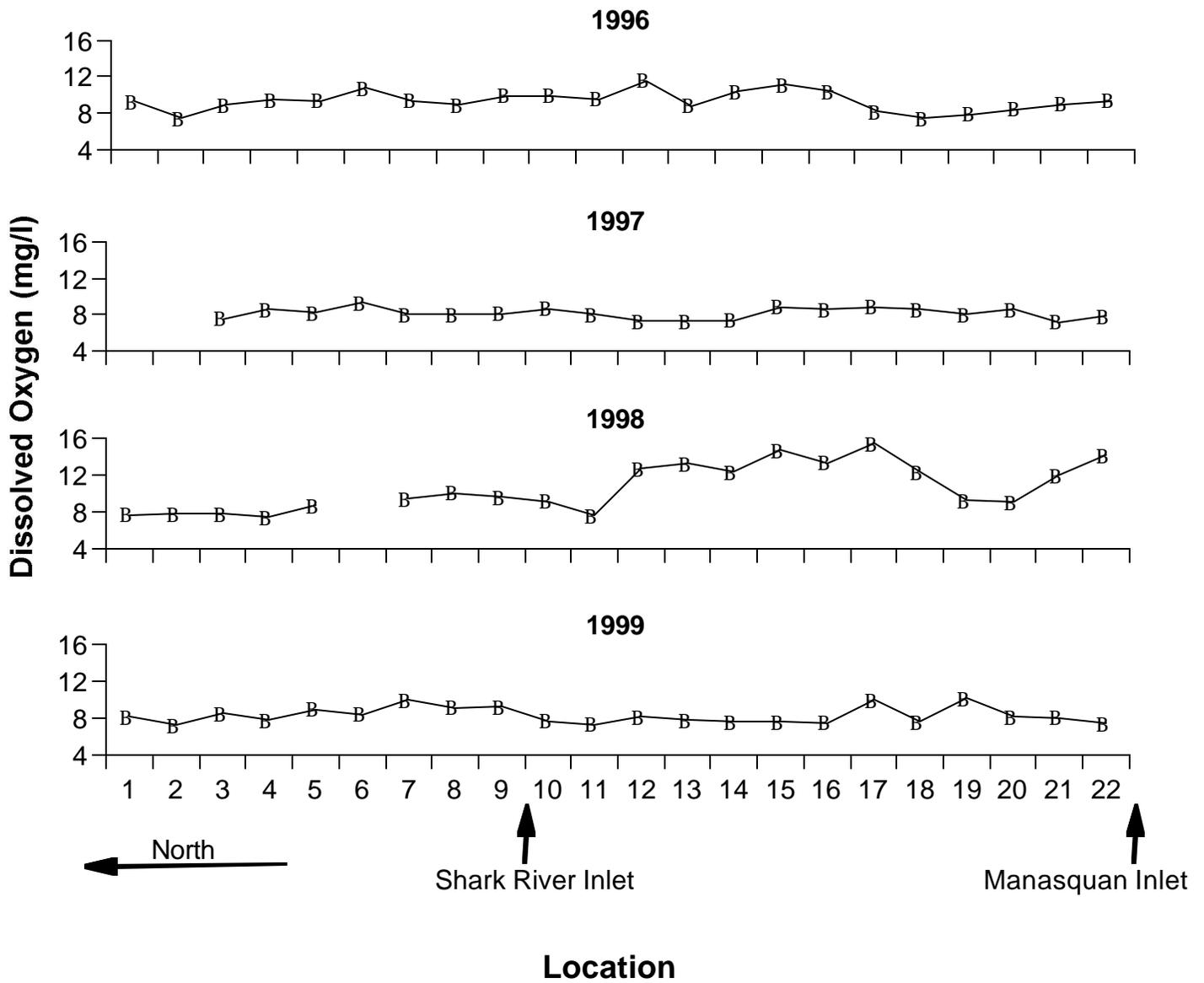


Figure 3-4. Average dissolved oxygen (mg/l) by study site (see Fig. 3-1) for ichthyoplankton sites in northern New Jersey.

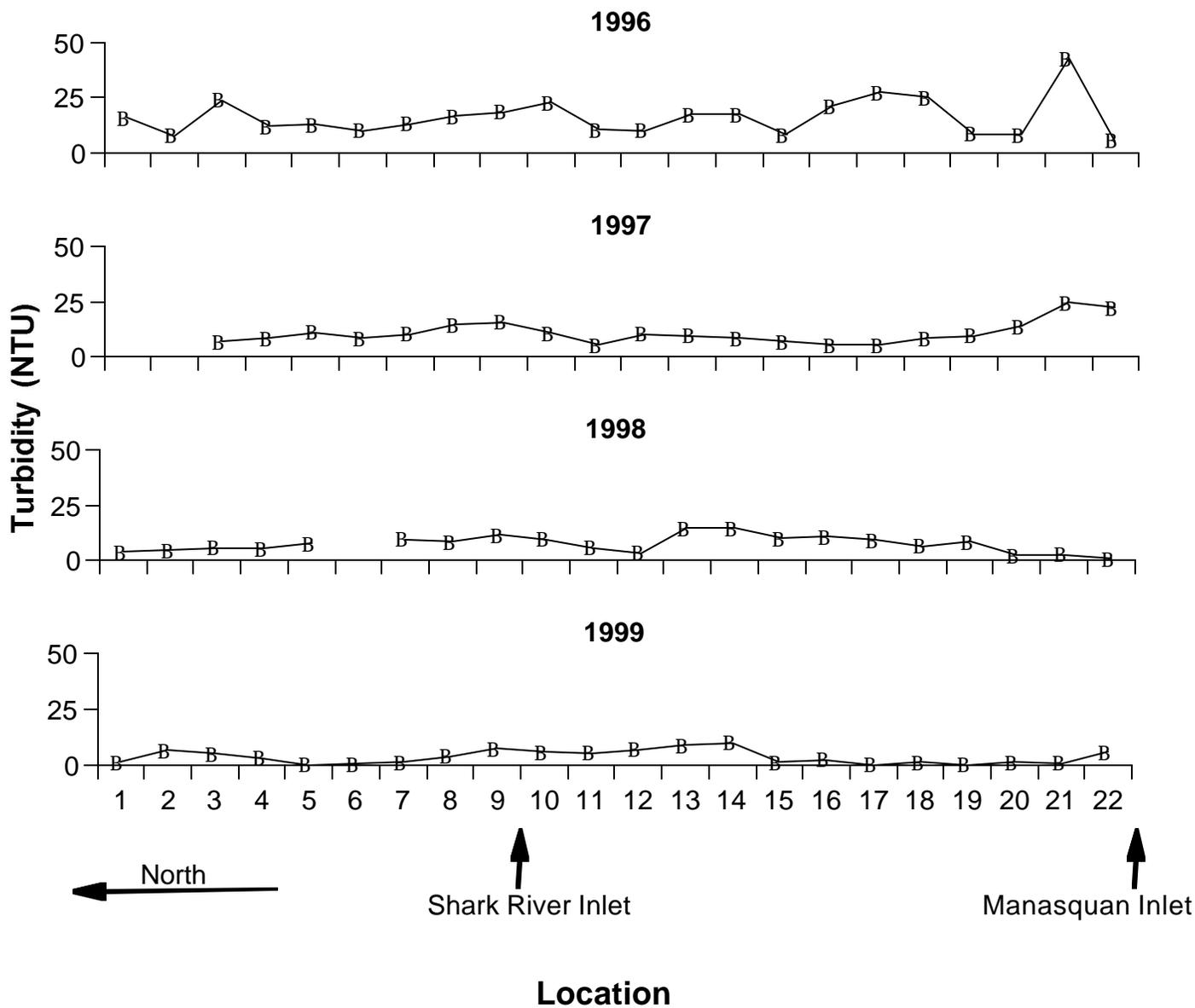


Figure 3-5. Average turbidity (NTU) by study site (see Fig. 3-1) for ichthyoplankton sites in northern New Jersey.

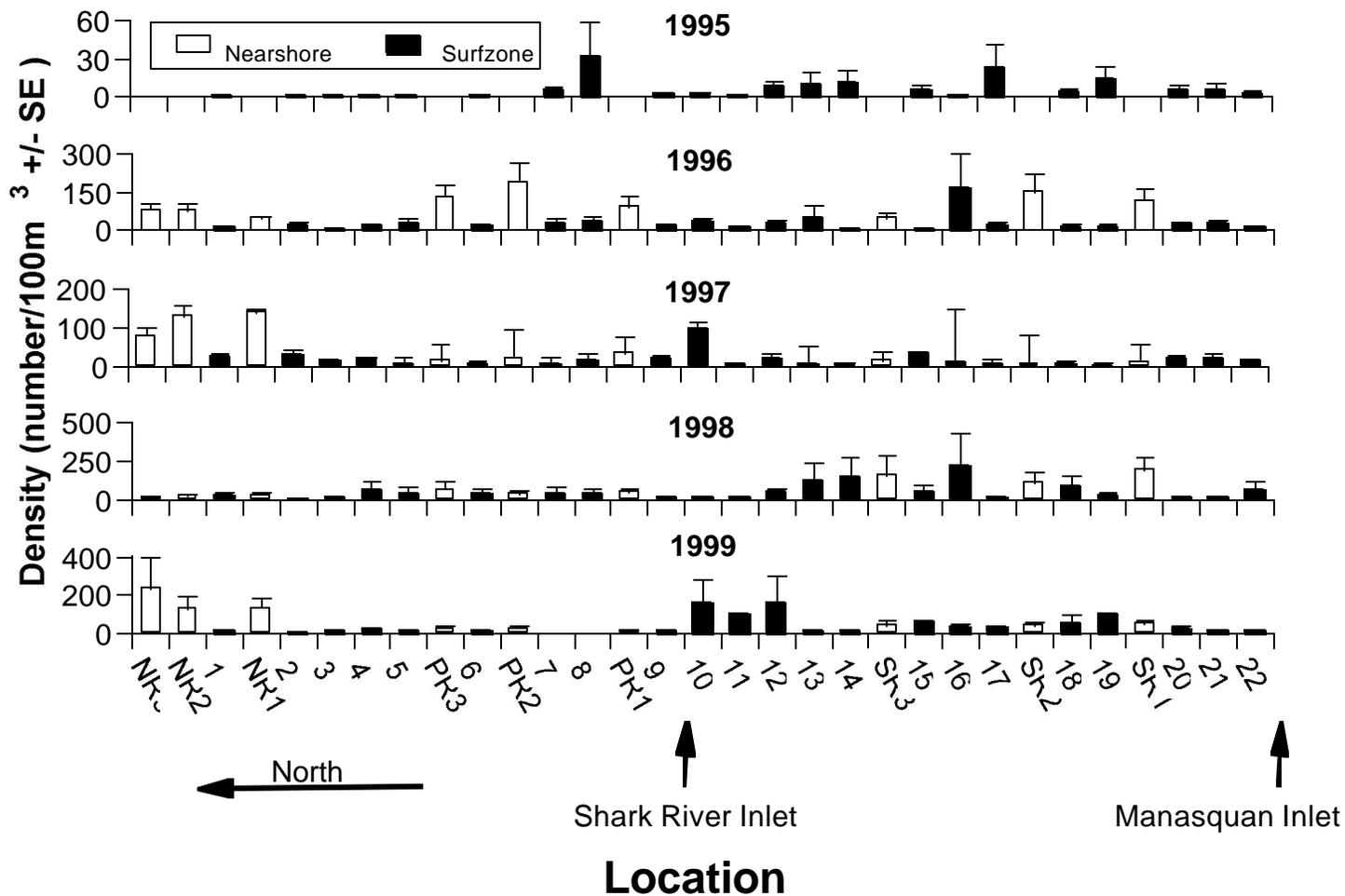


Figure 3-6. Average larval density for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

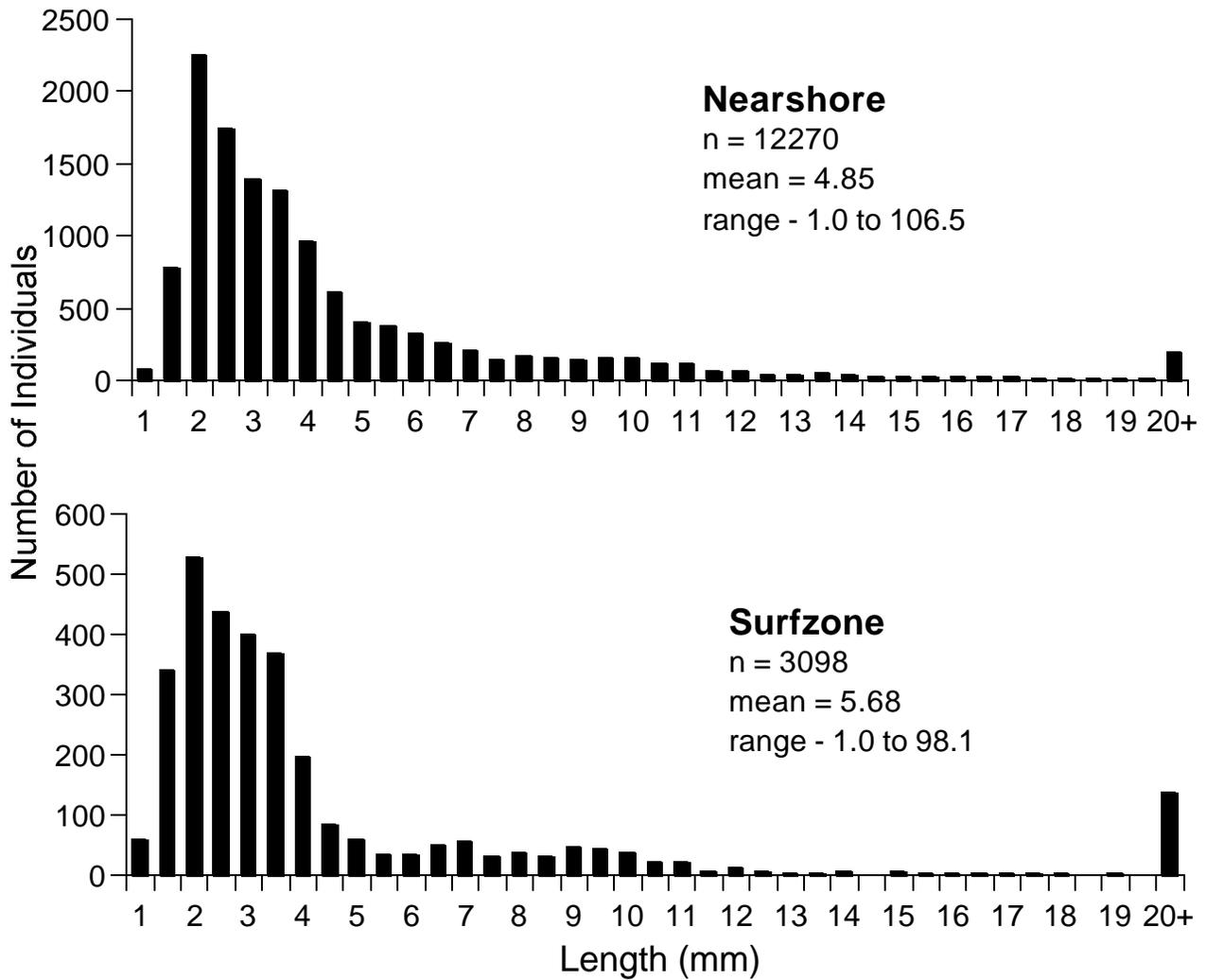


Figure 3-7. Composite lengths for (surfzone and nearshore) ichthyoplankton samples from northern New Jersey beaches for 1996 through 1999.

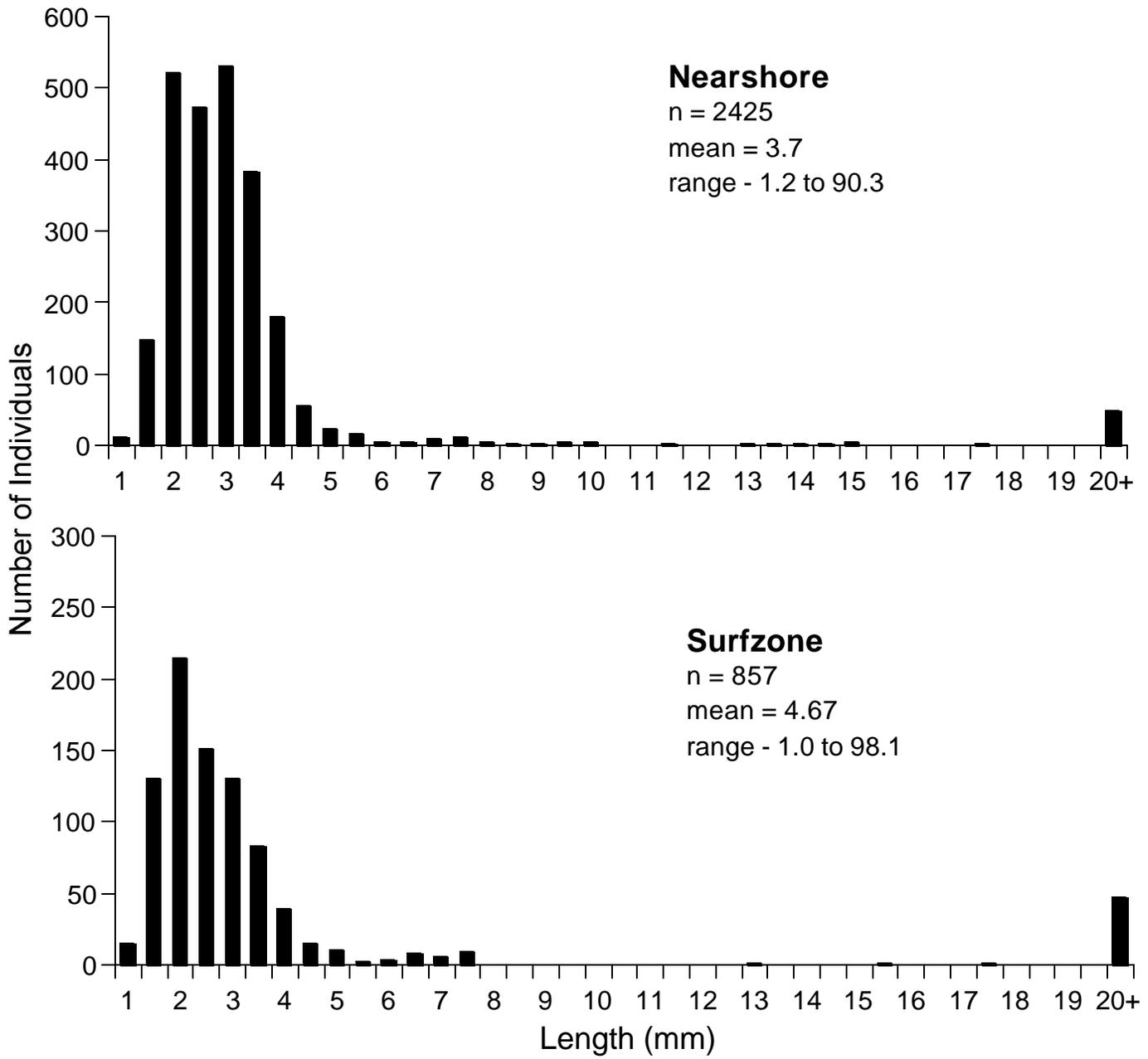


Figure 3-8. Composite lengths for (surfzone and nearshore) ichthyoplankton samples from northern New Jersey beaches for 1996.

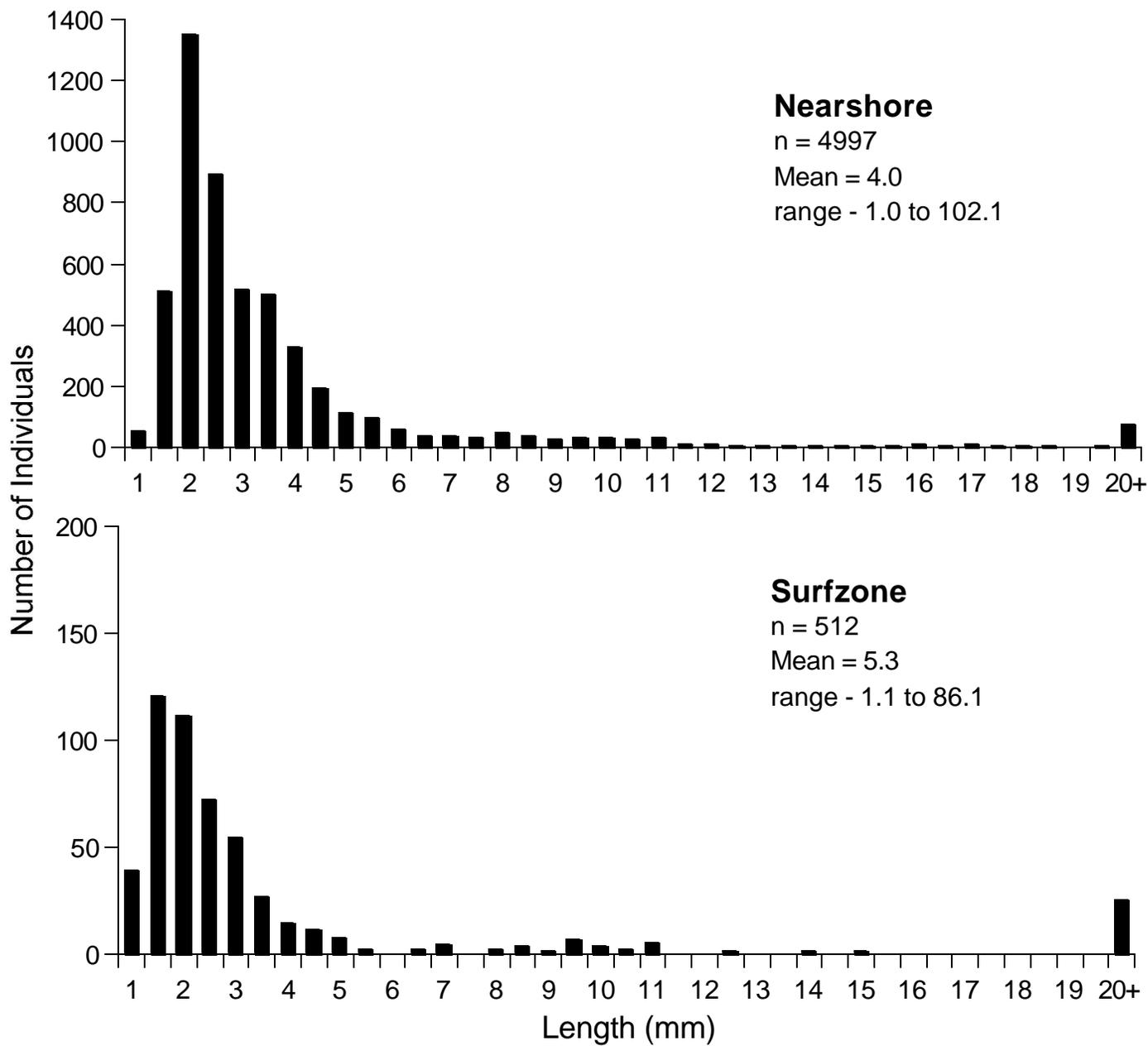


Figure 3-9. Composite lengths for (surfzone and nearshore) ichthyoplankton samples from northern New Jersey beaches for 1997.

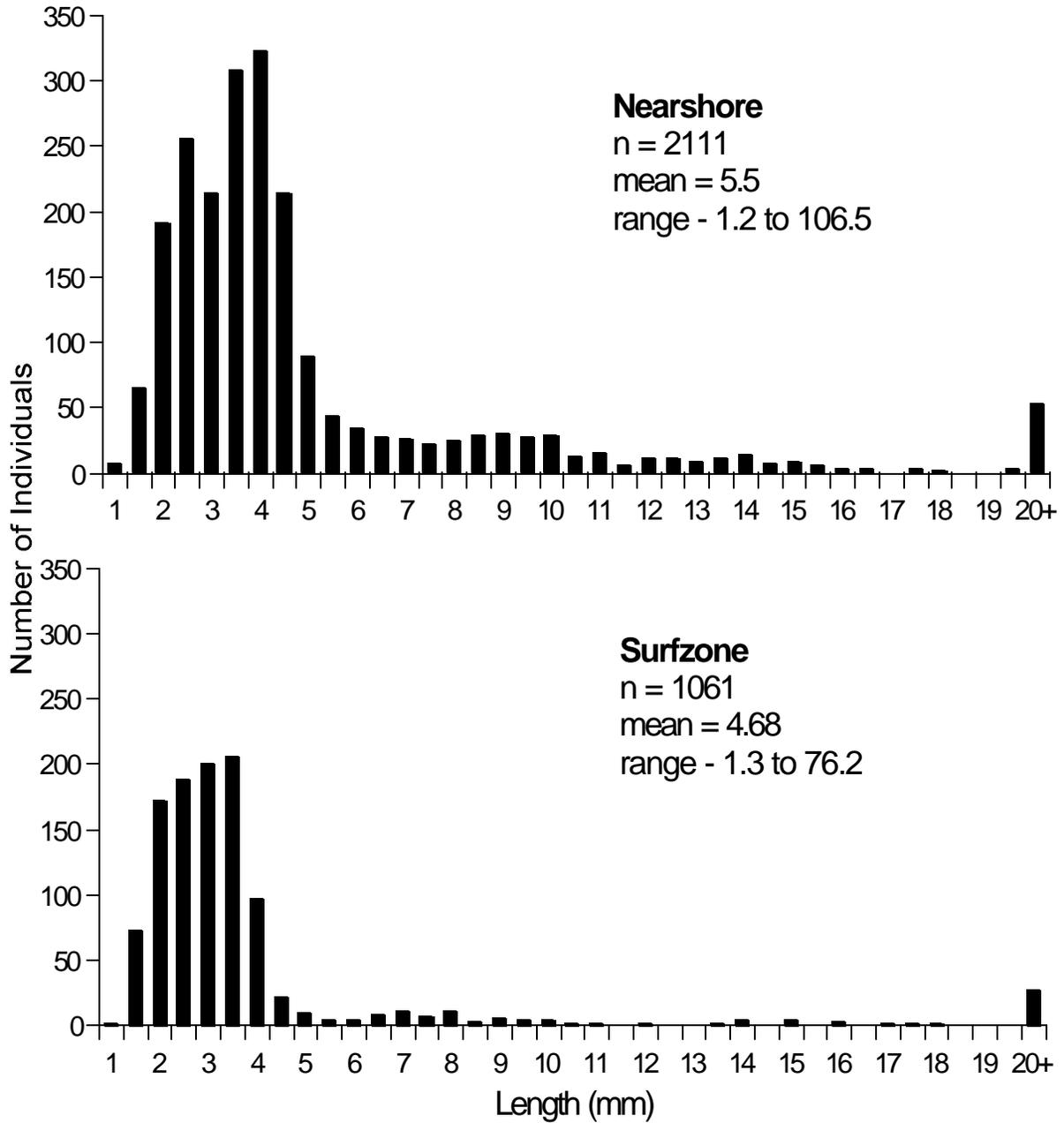


Figure 3-10. Composite lengths for (surfzone and nearshore) ichthyoplankton samples from northern New Jersey beaches for 1998.

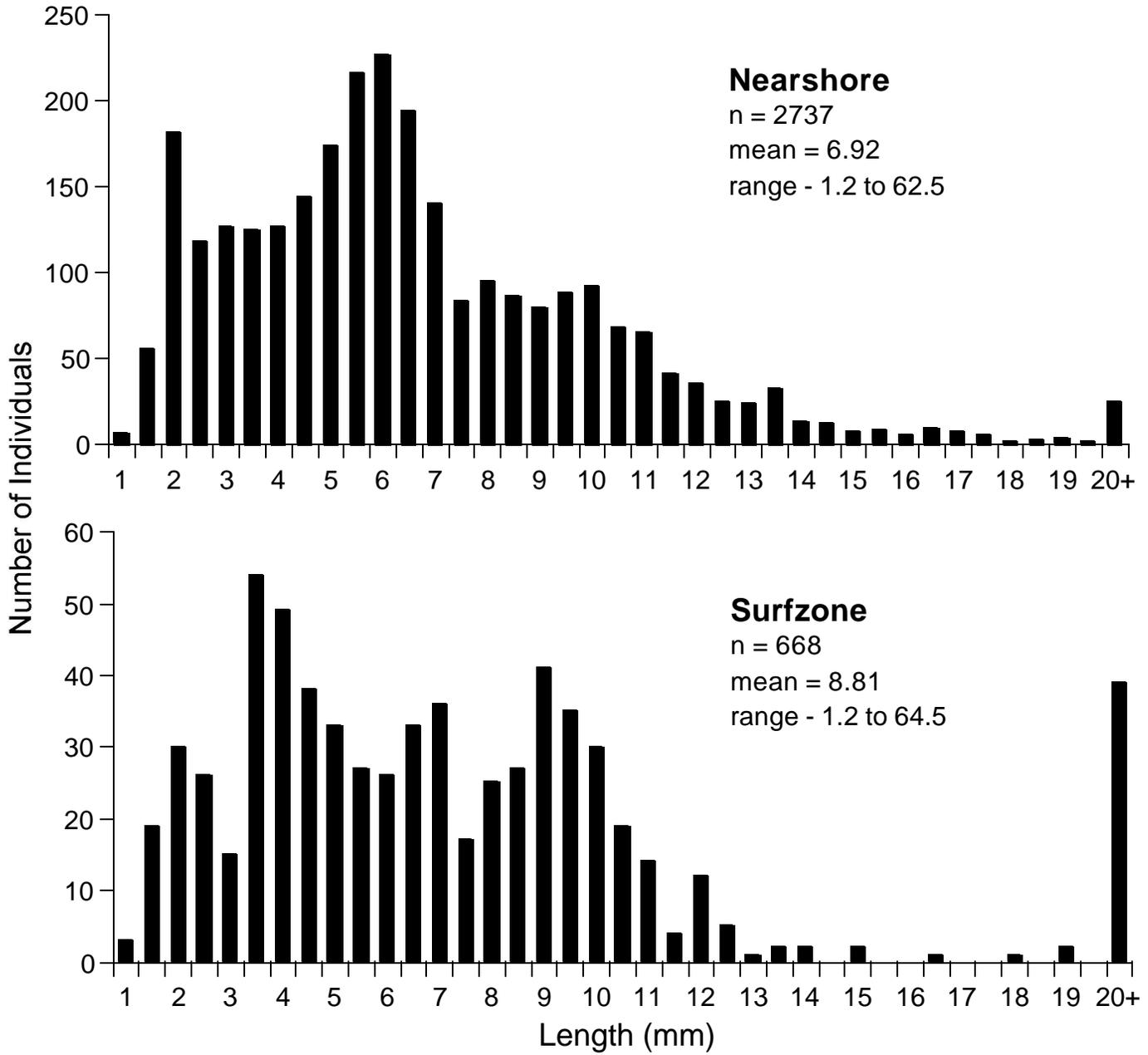


Figure 3-11. Composite lengths for (surfzone and nearshore) ichthyoplankton samples from northern New Jersey beaches for 1999.

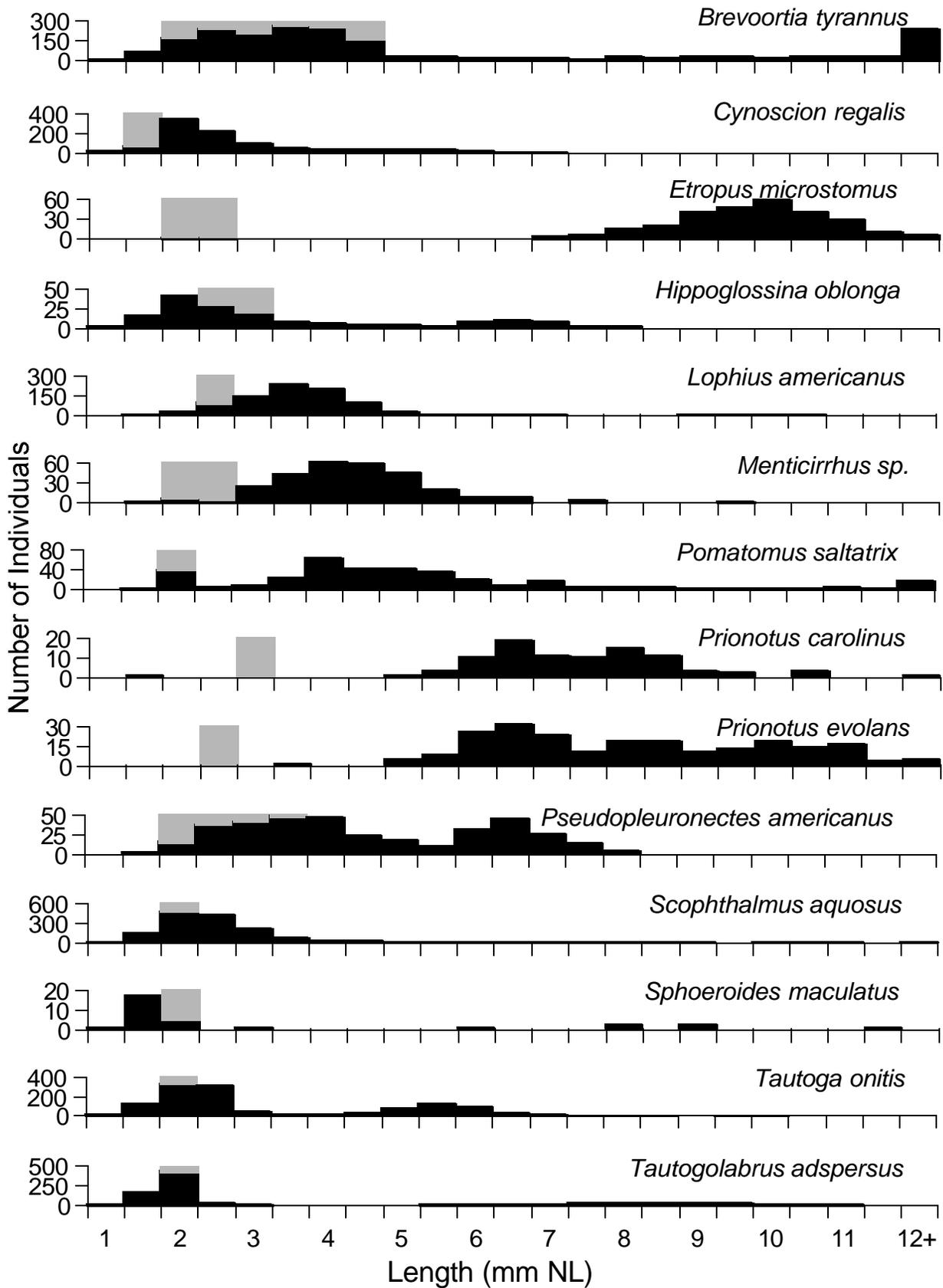


Figure 3-12. Length composition (black) relative to hatching size reported from the literature (hatched area) for selected species collected from northern New Jersey beaches from 1995 through 1999 (nearshore and surfzone combined).

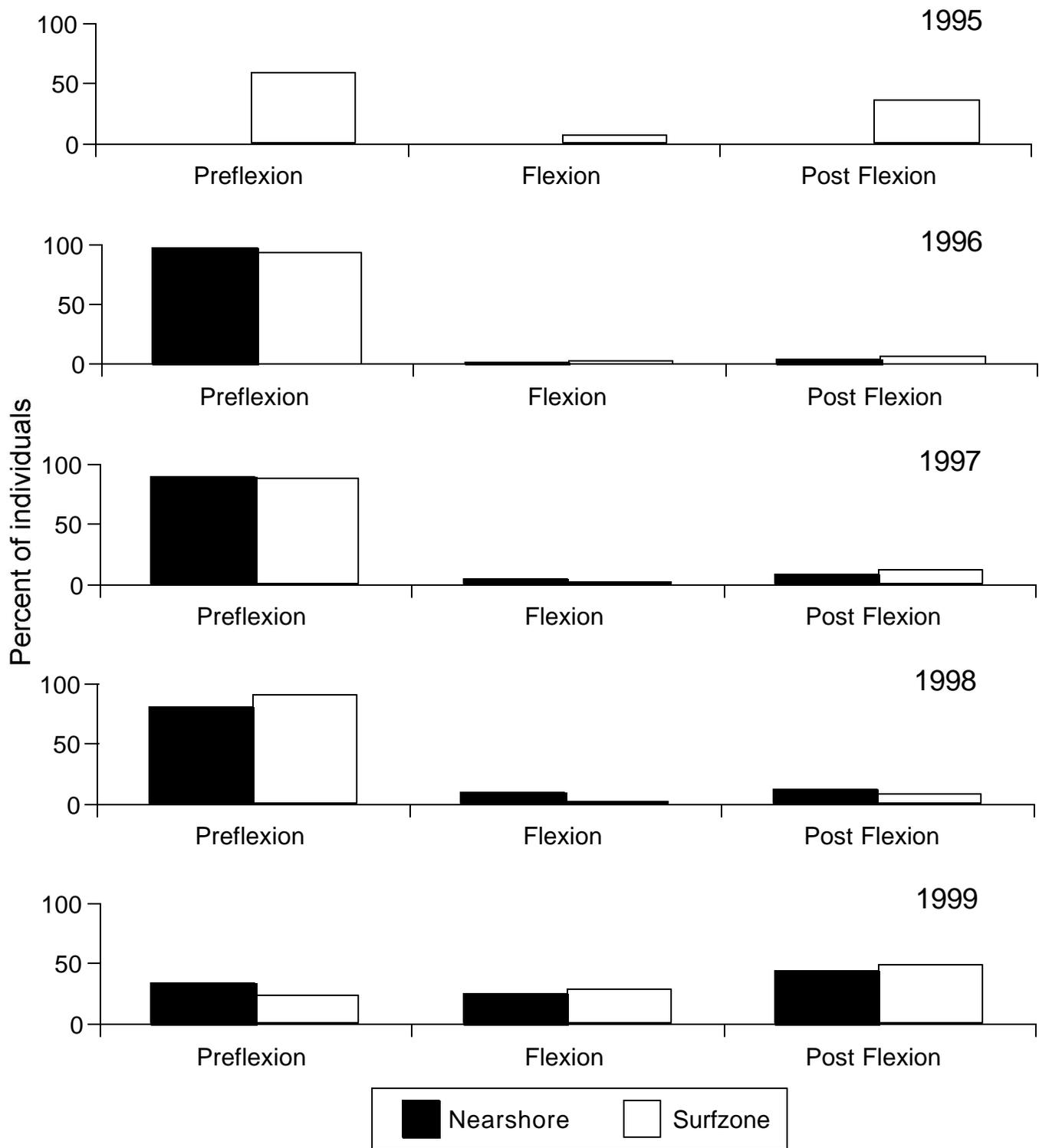


Figure 3-13. Flexion stage composition for ichthyoplankton samples from northern New Jersey beaches. Note there were no nearshore collections in 1995. See Fig. 3-1 for sampling locations.

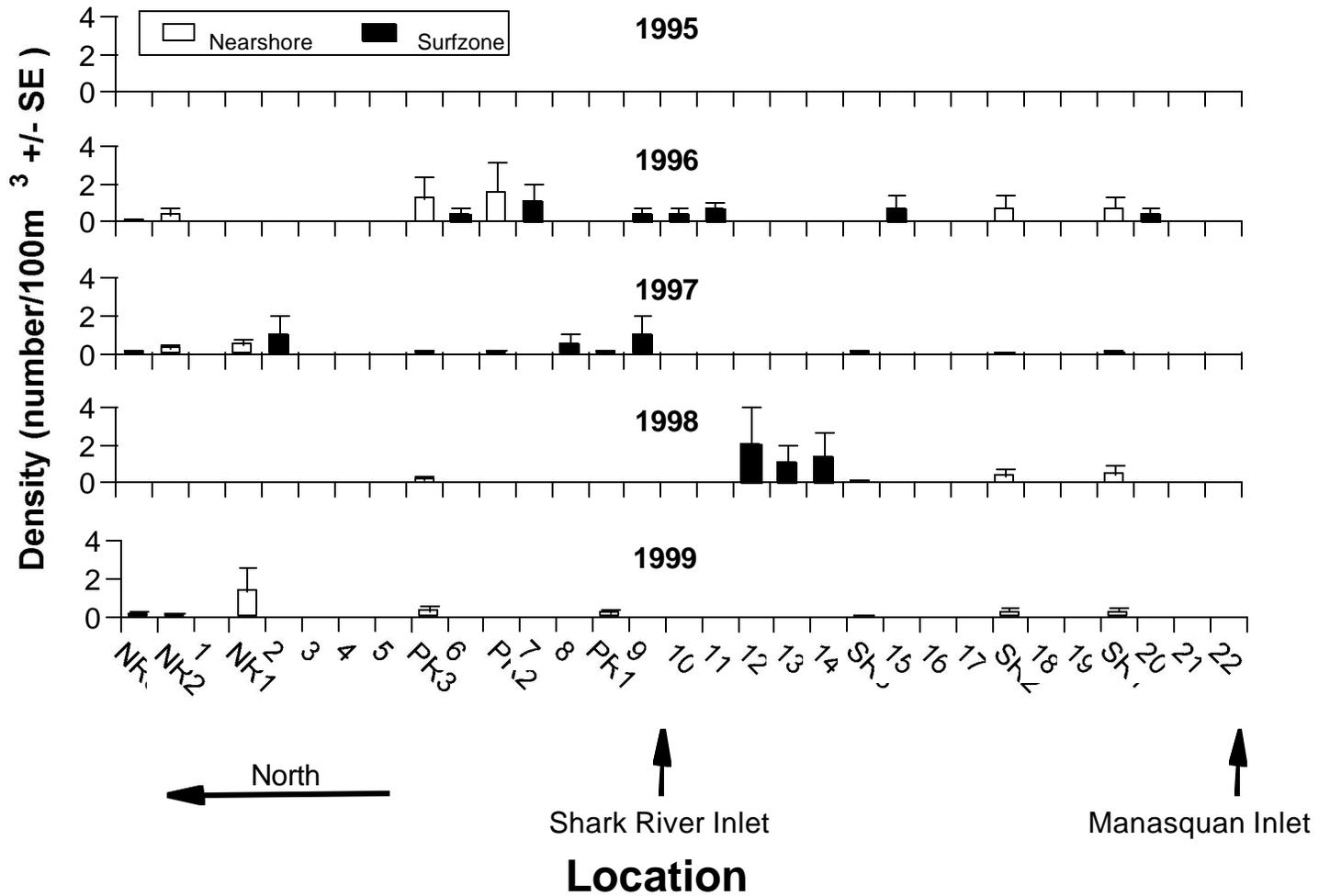


Figure 3-14. Average larval density of *Hippoglossina oblonga* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

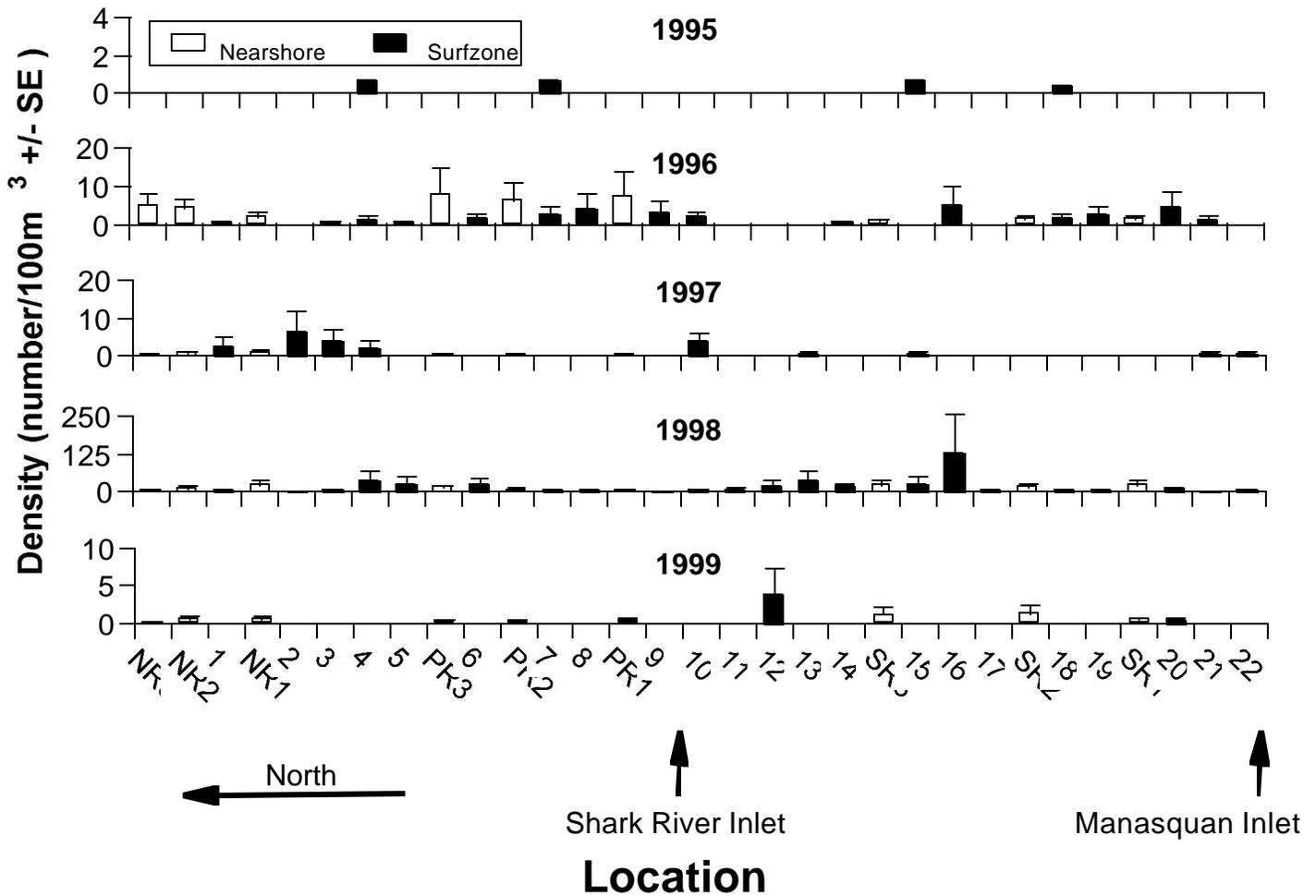


Figure 3-15. Average larval density of *Scophthalmus aquosus* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

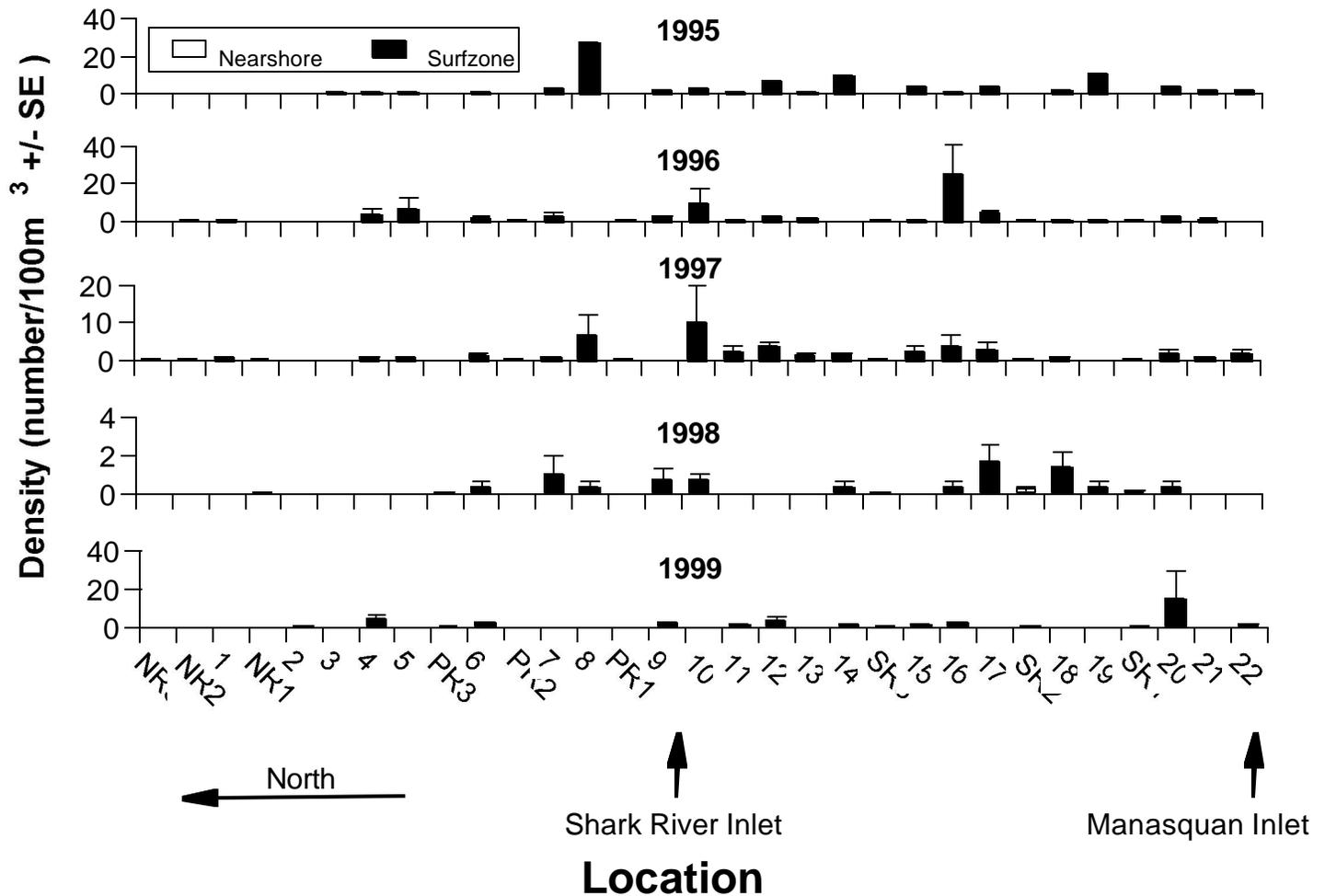


Figure 3-16. Average larval density of *Atherinidae* sp. for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

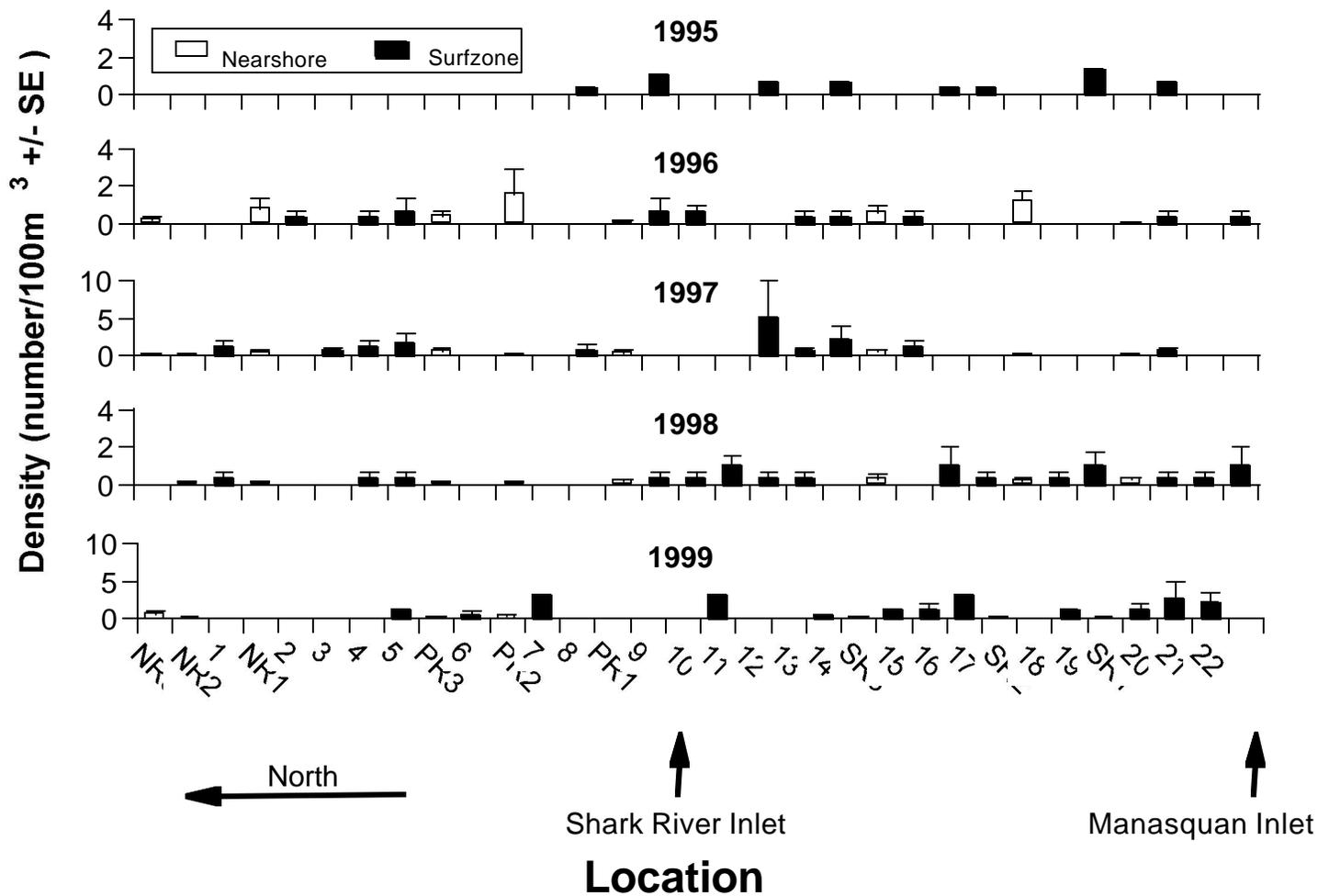


Figure 3-17. Average larval density of *Syngnathus fuscus* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

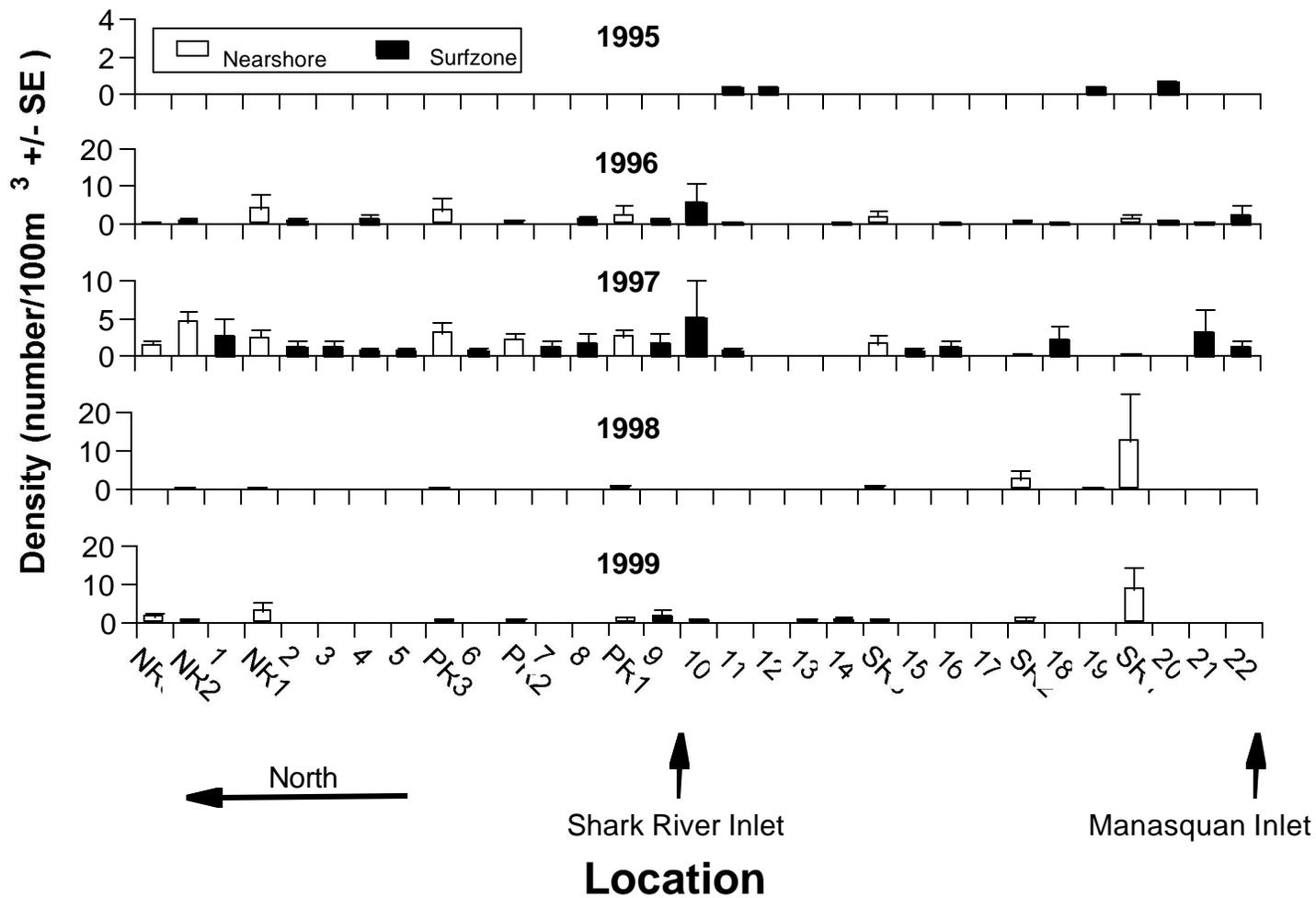


Figure 3-18. Average larval density of *Cynoscion regalis* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

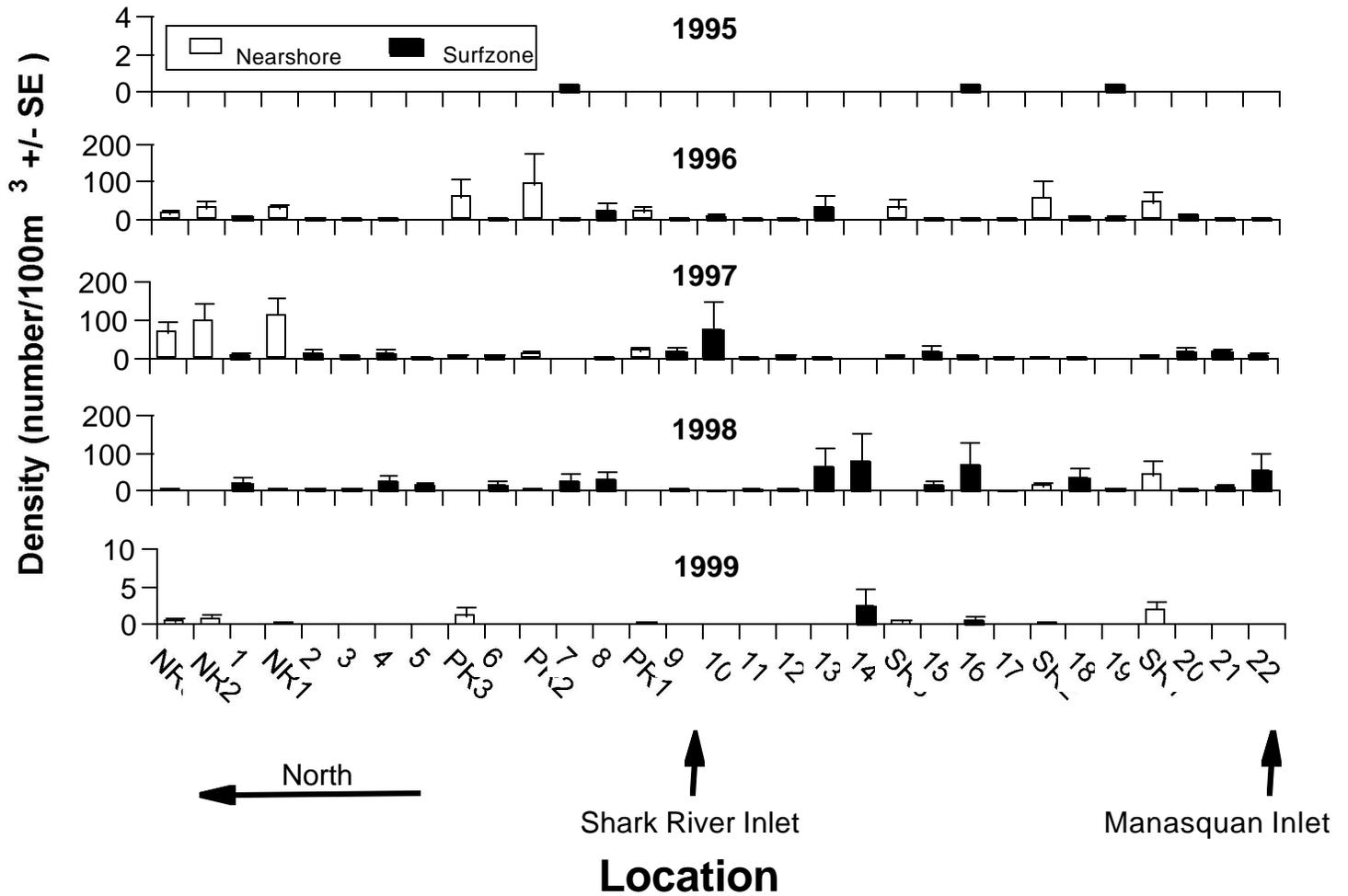


Figure 3-19. Average larval density of *Anchoa* sp. for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

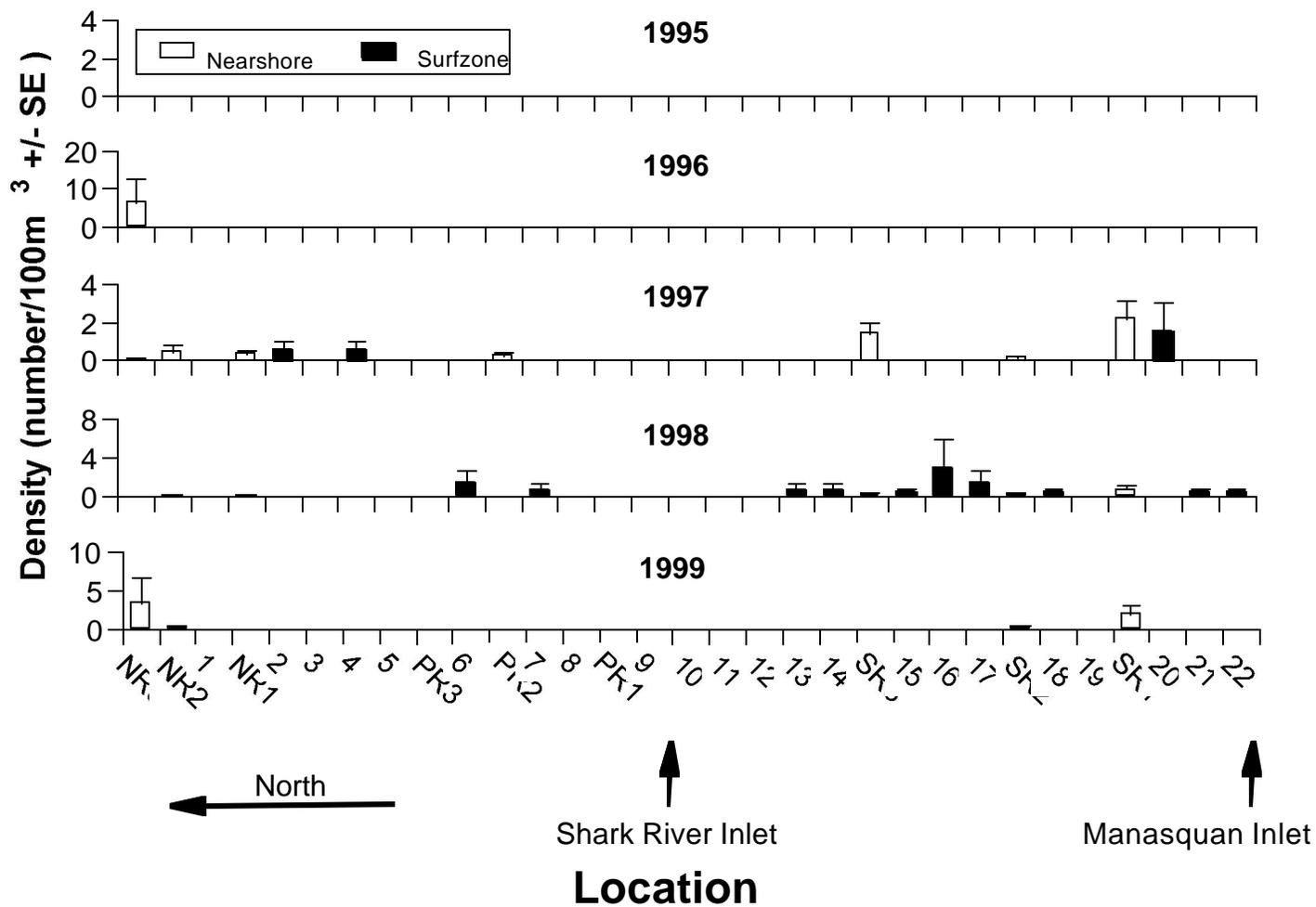


Figure 3-20. Average larval density of *Anchoa mitchilli* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

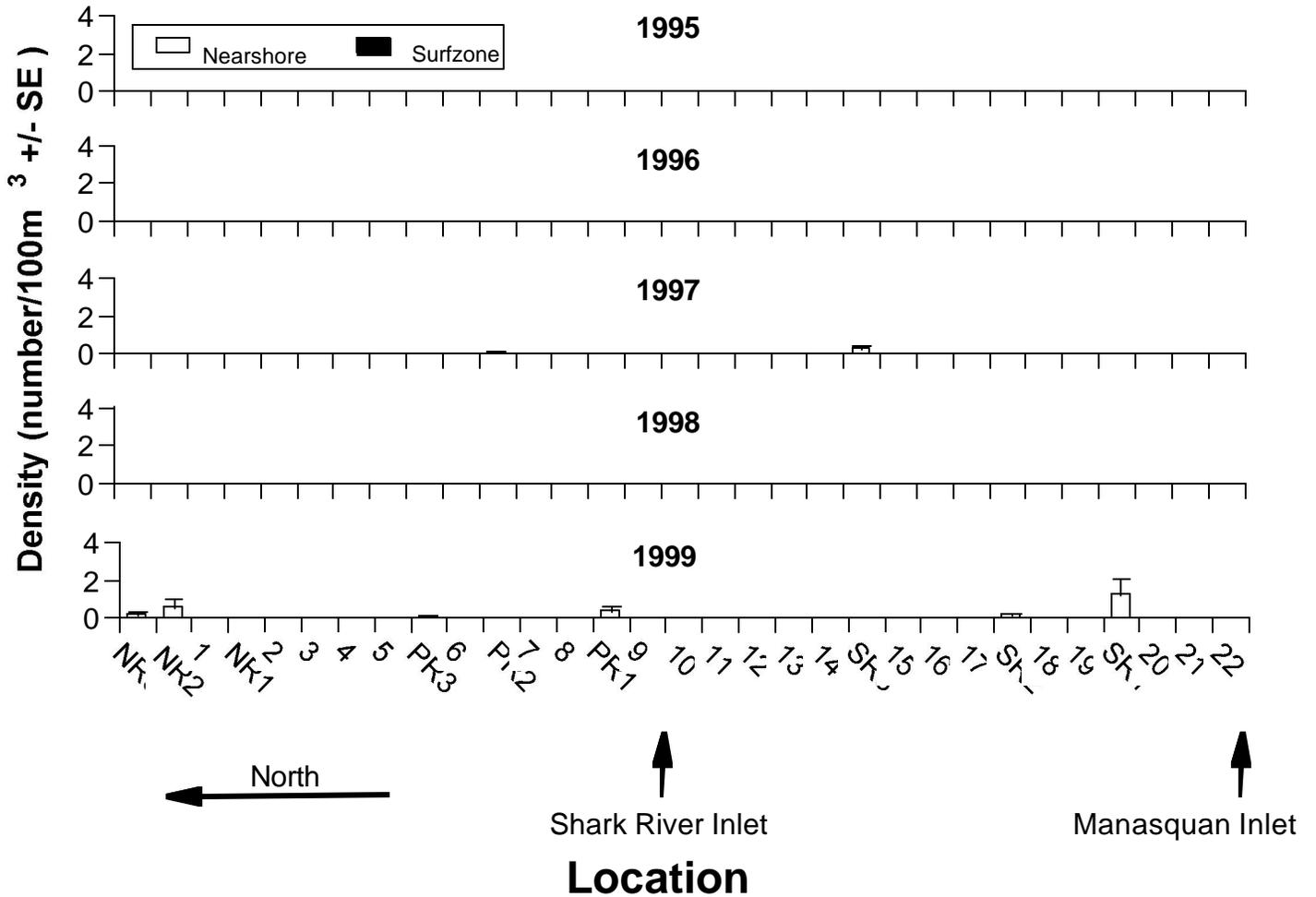


Figure 3-21. Average larval density of *Anchoa hepsetus* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

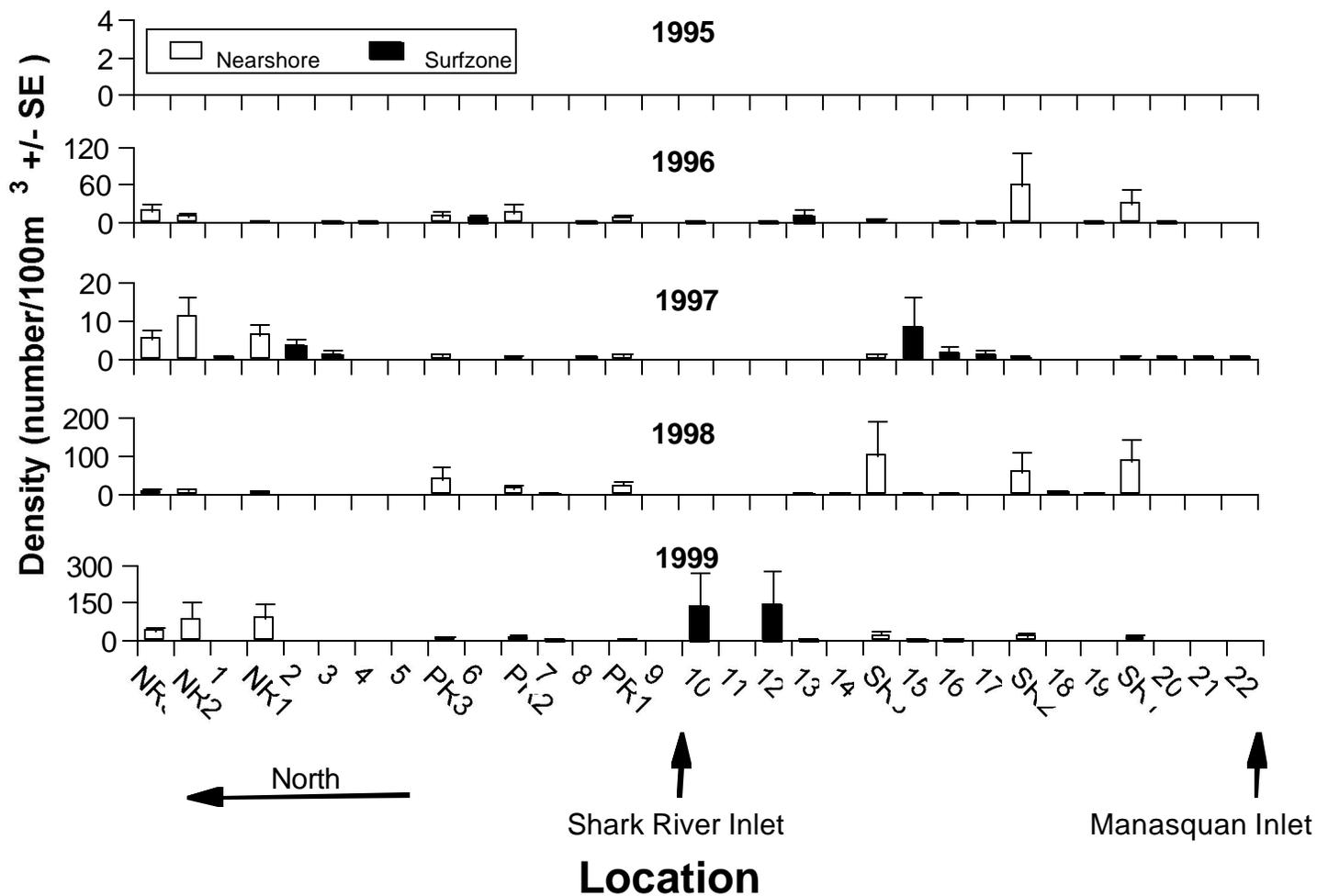


Figure 3-22. Average larval density of *Brevoortia tyrannus* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

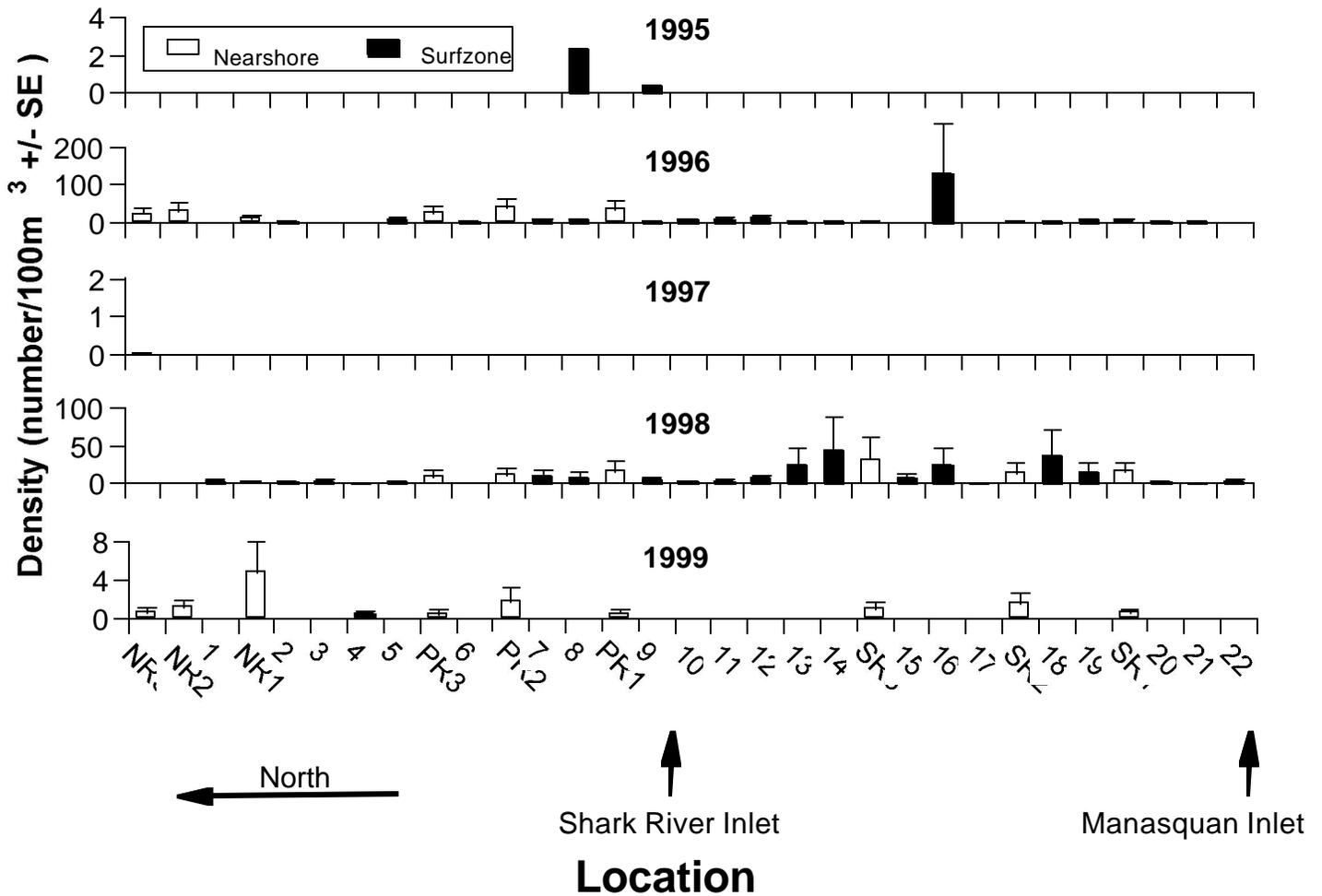


Figure 3-23. Average larval density of *Scomber scombrus* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

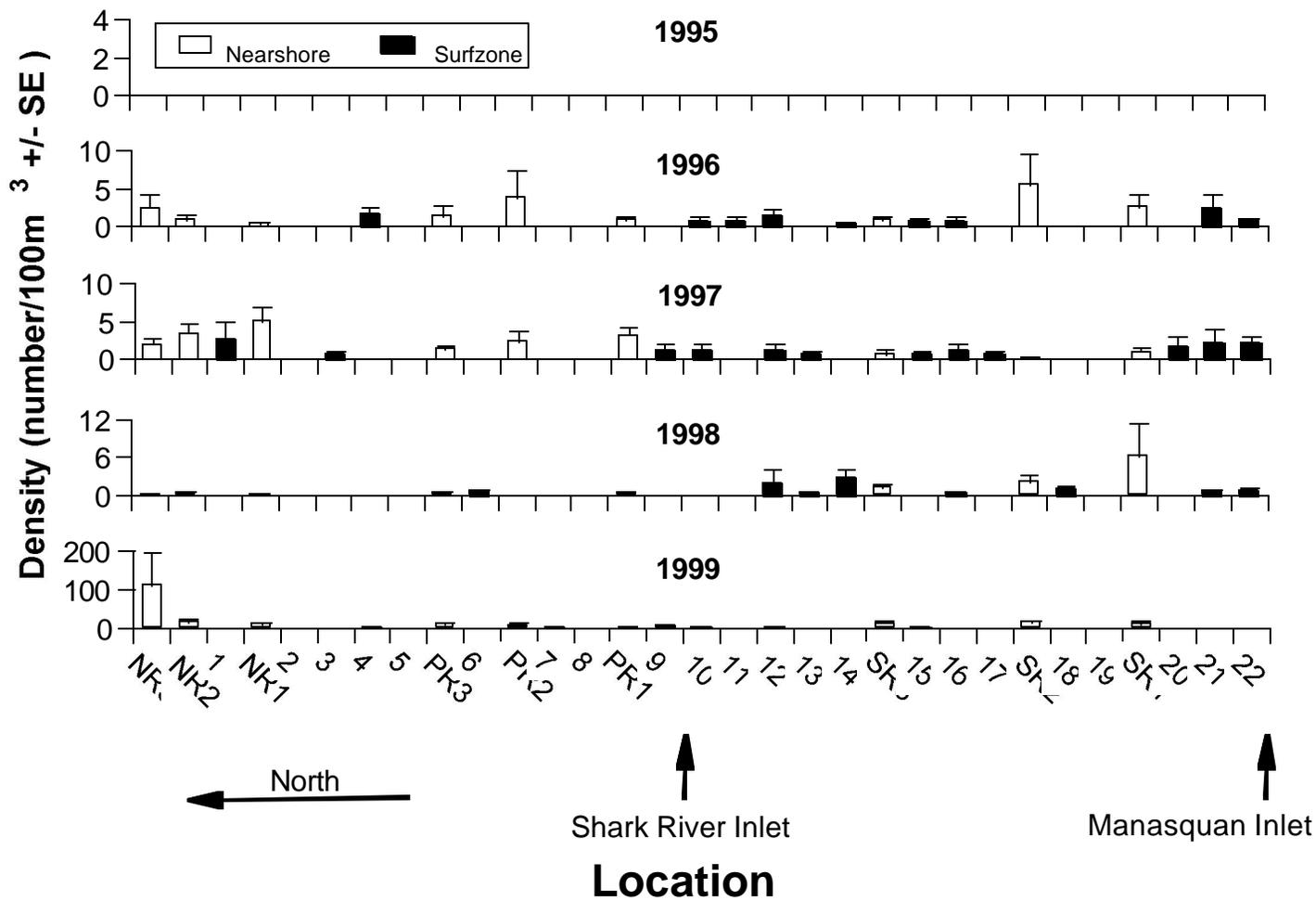


Figure 3-24. Average larval density of *Tautoga onitis* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

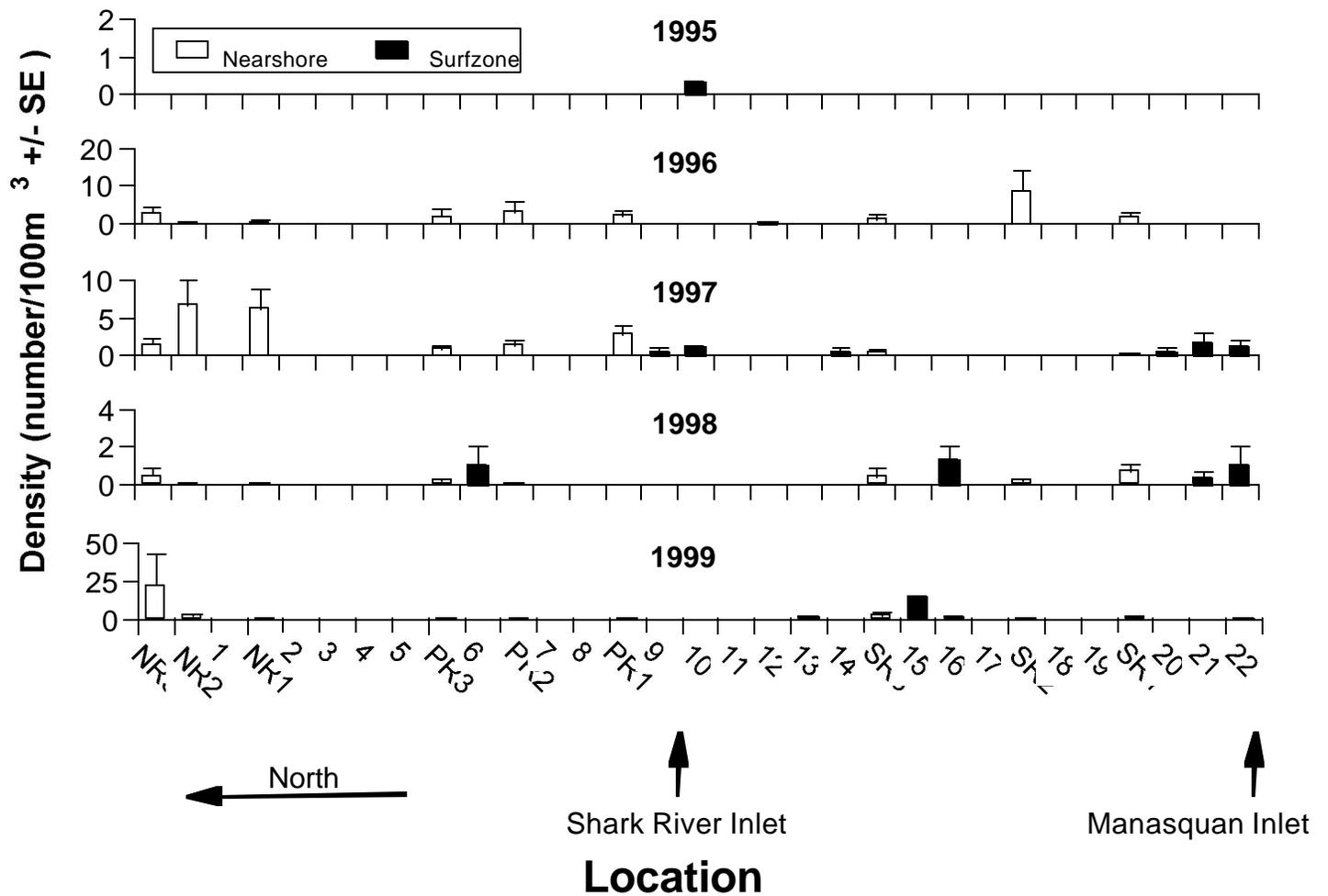


Figure 3-25. Average larval density of *Tautoglabrus adspersus* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

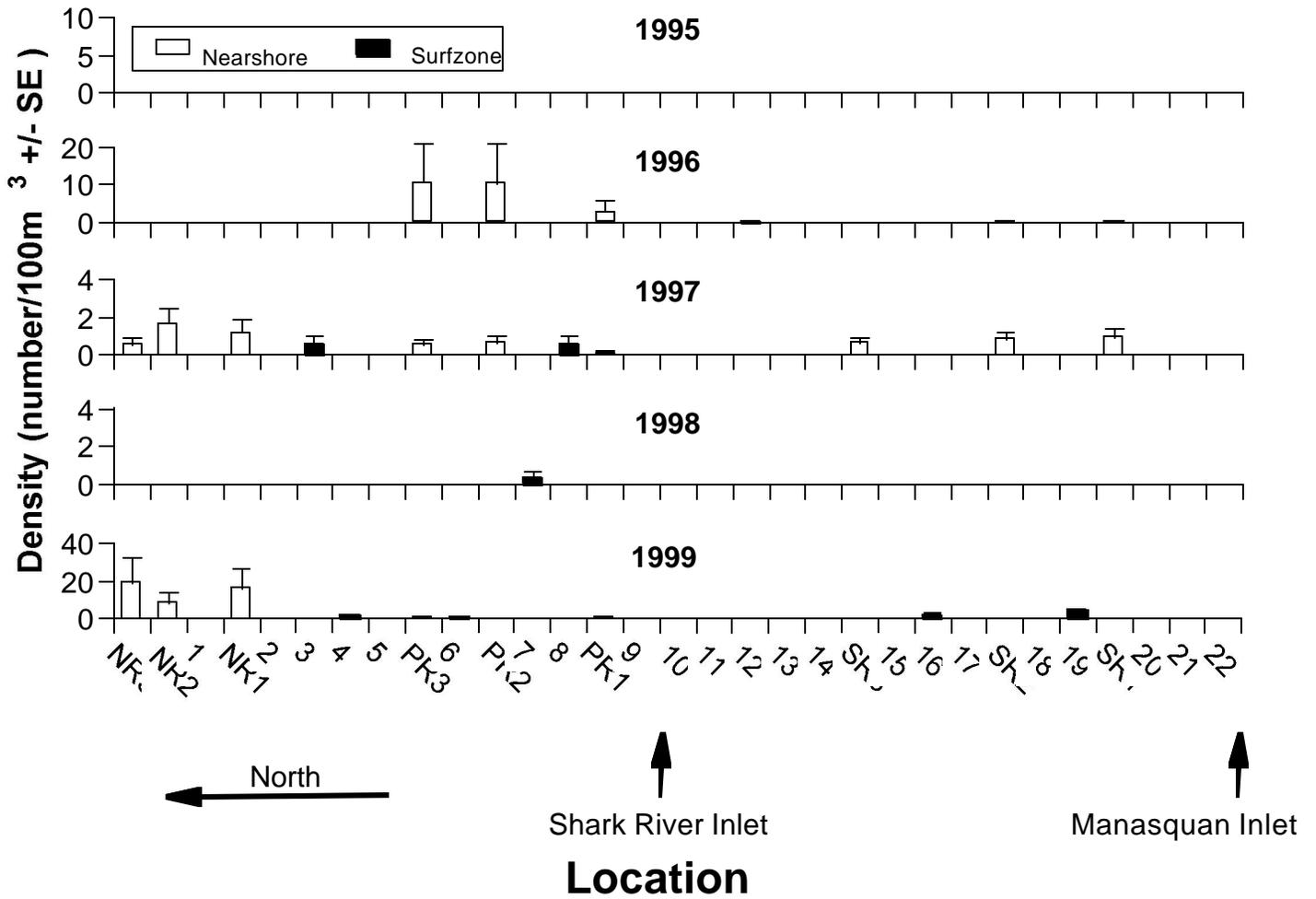


Figure 3-26. Average larval density of *Pomatomus saltatrix* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

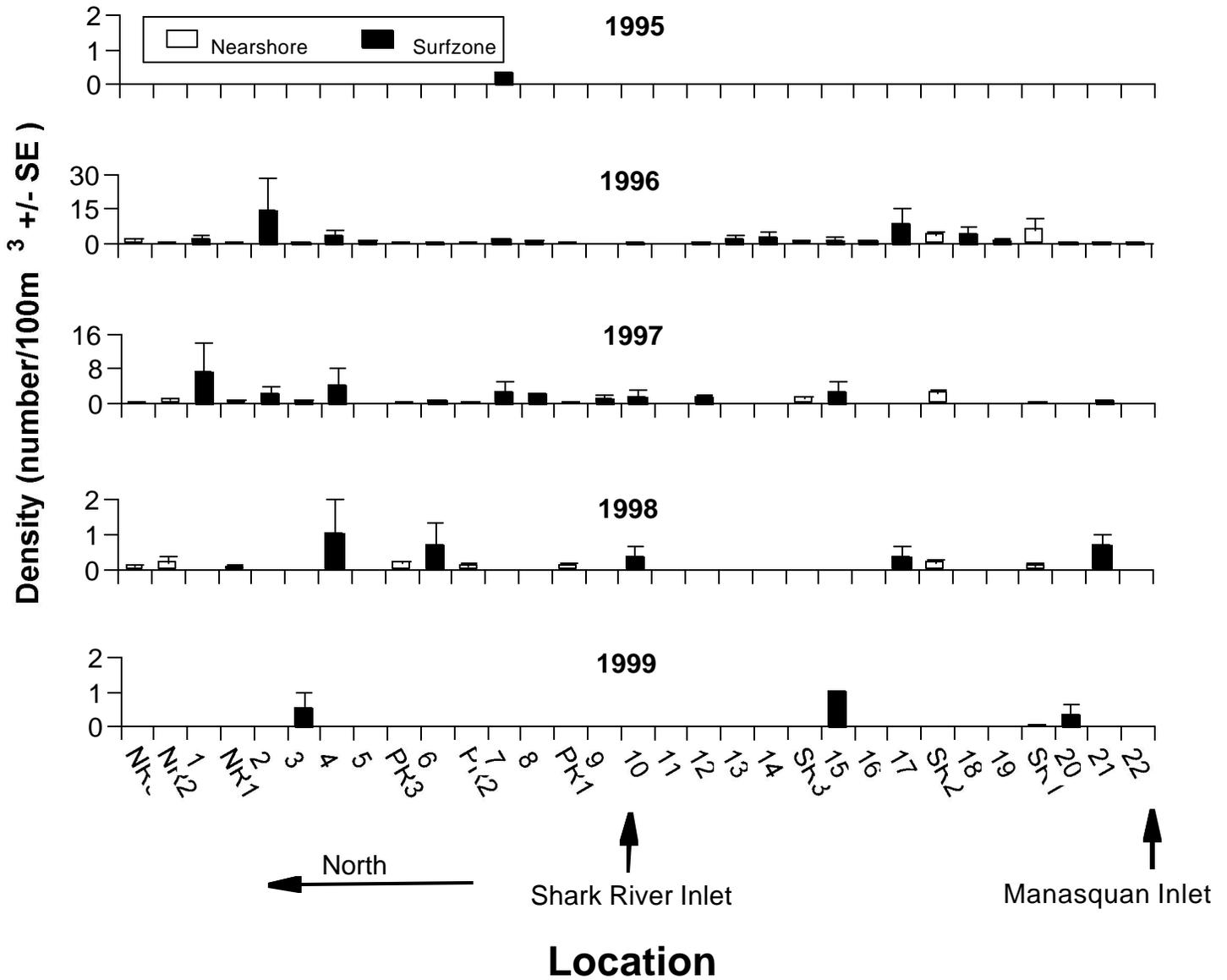


Figure 3-27. Average larval density of *Lophius americanus* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

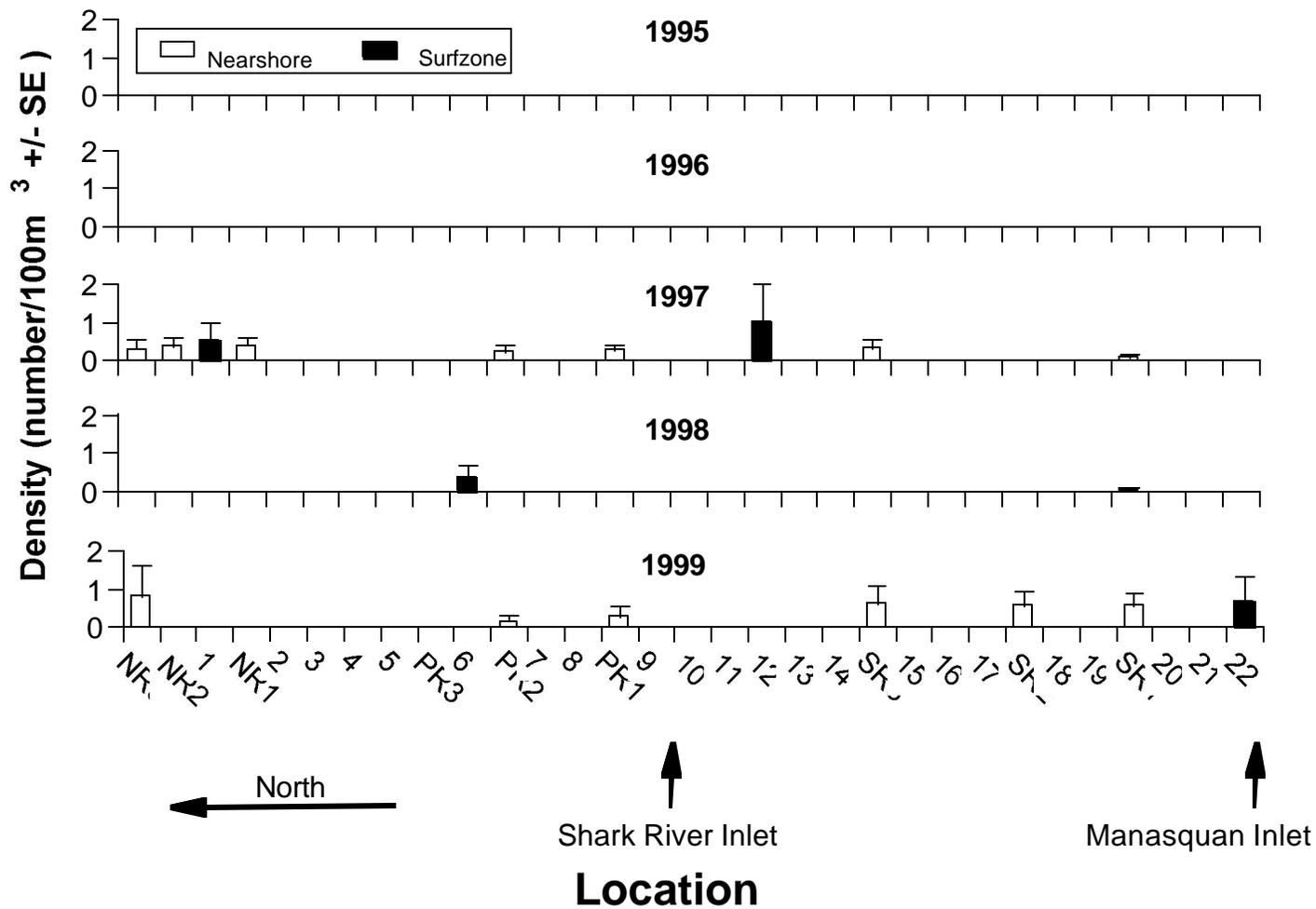


Figure 3-28. Average larval density of *Prionotus carolinus* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

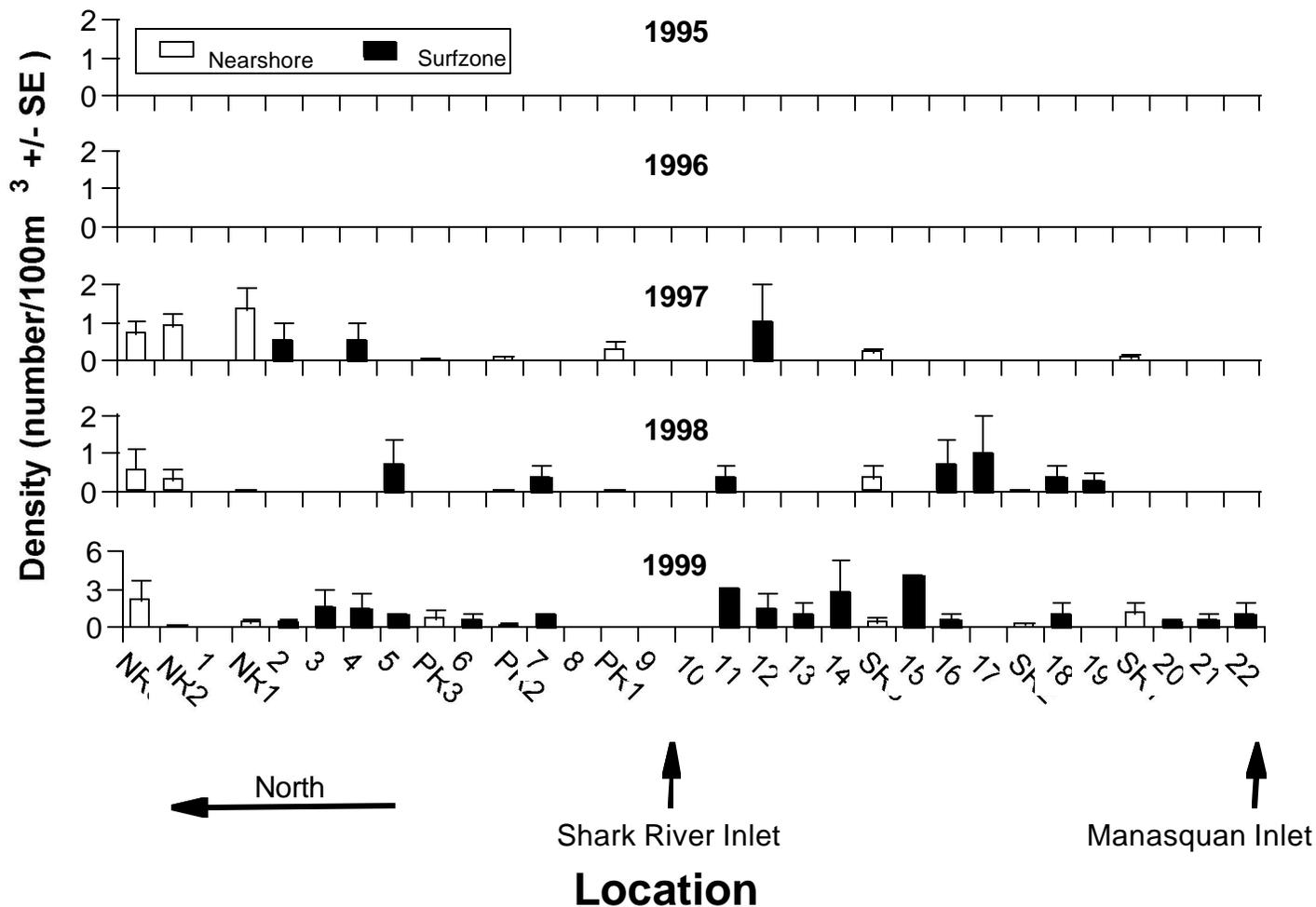


Figure 3-29. Average larval density of *Prionotus evolans* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

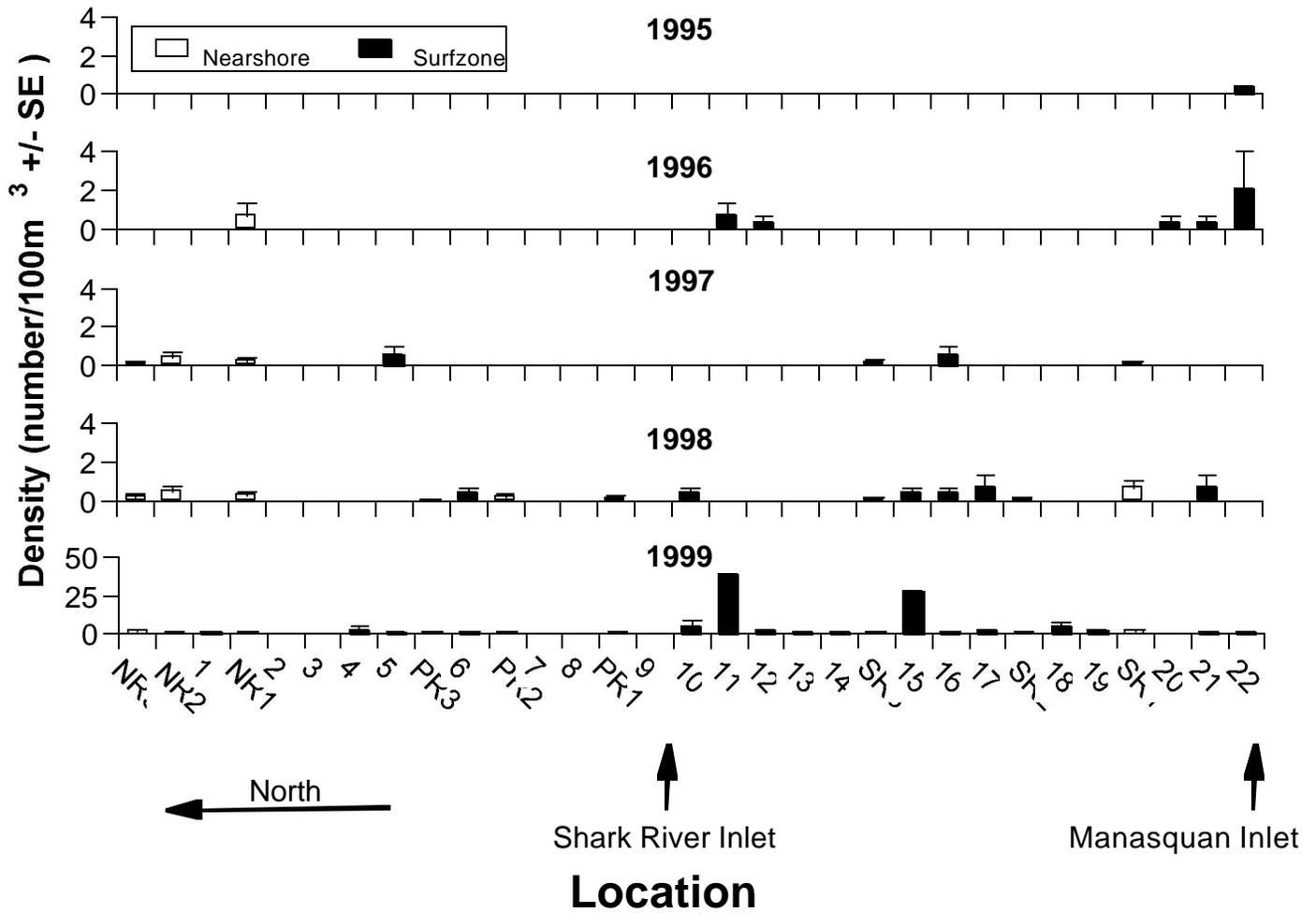


Figure 3-30. Average larval density of *Menticirrhus* sp. for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.



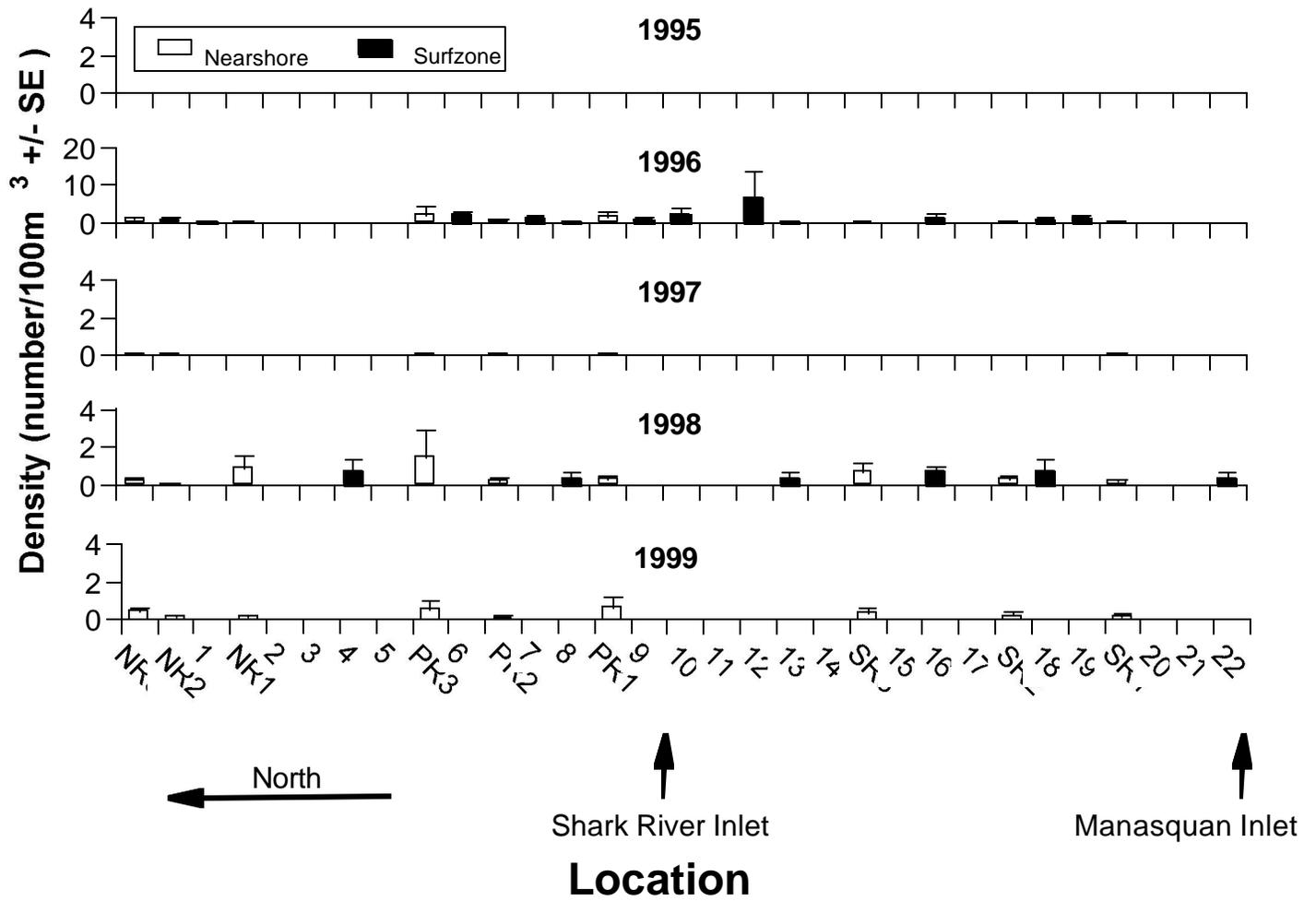


Figure 3-32. Average larval density of *Enchelyopus cimbrius* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

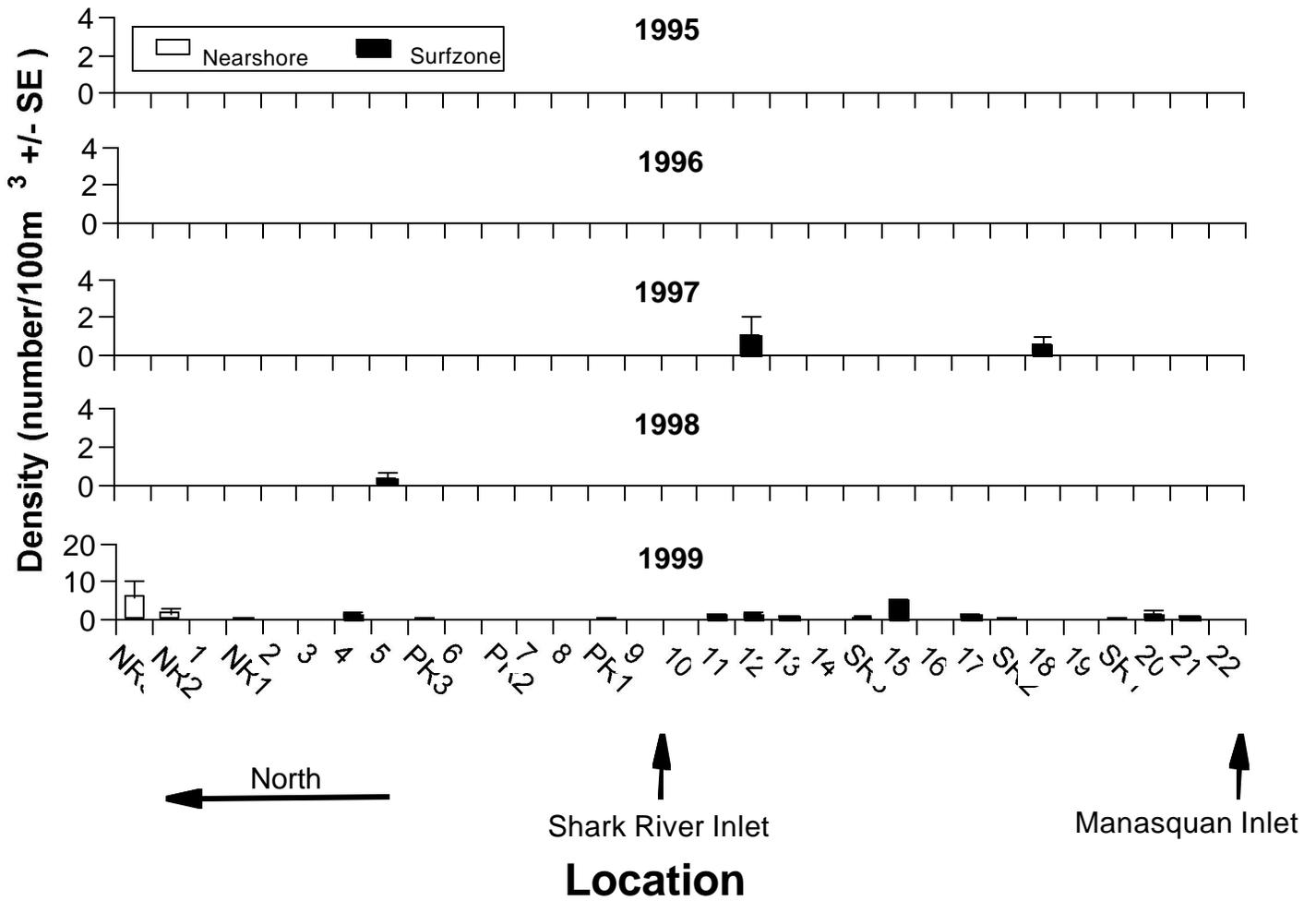


Figure 3-33. Average larval density of *Centropristis striata* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

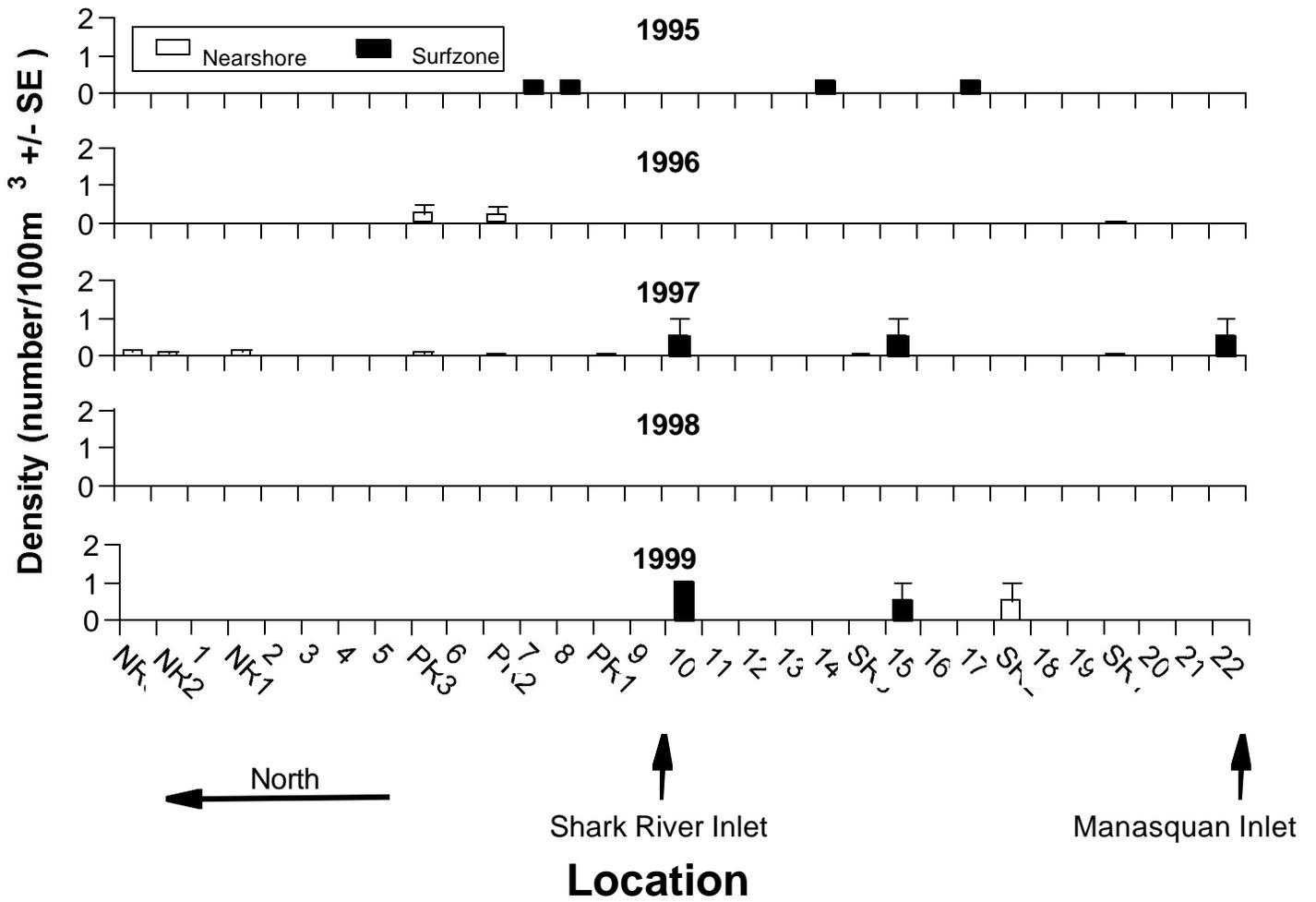


Figure 3-34. Average larval density of *Sphaeroides maculatus* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

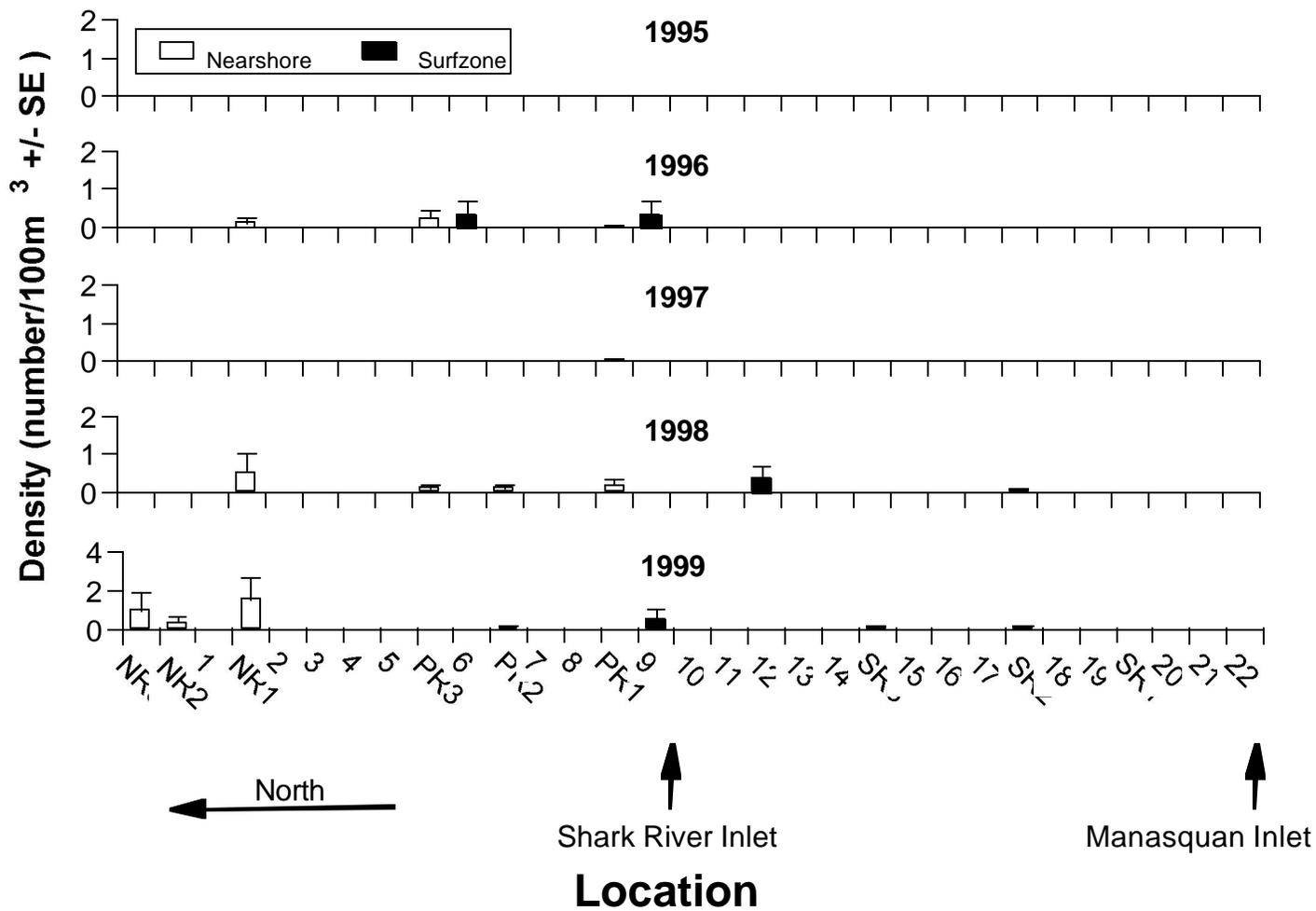


Figure 3-35. Average larval density of *Urophycis chuss* for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

## Estuarine Species

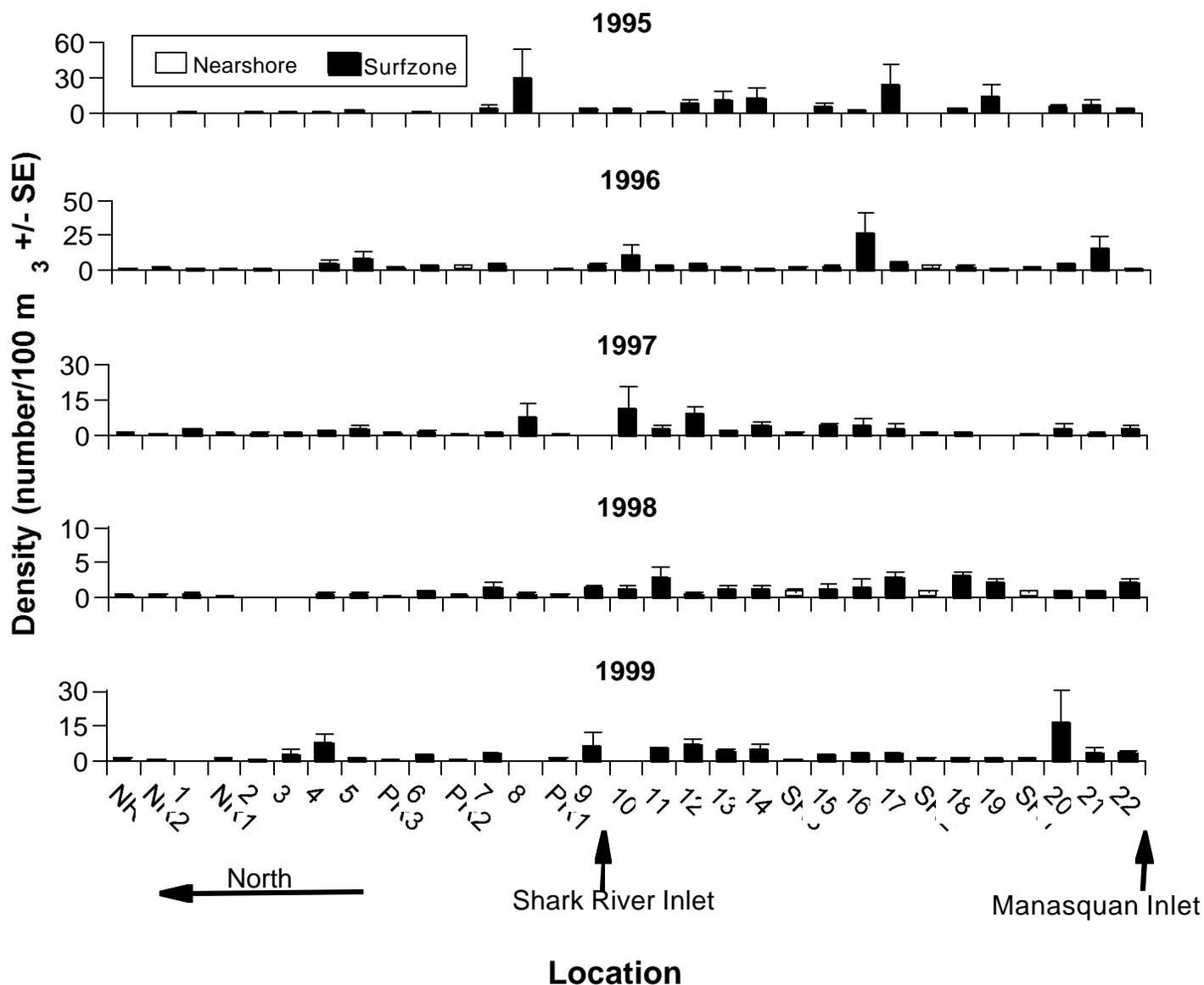


Figure 3-36. Average larval density for species of estuarine origin for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

## Estuarine/Ocean Species

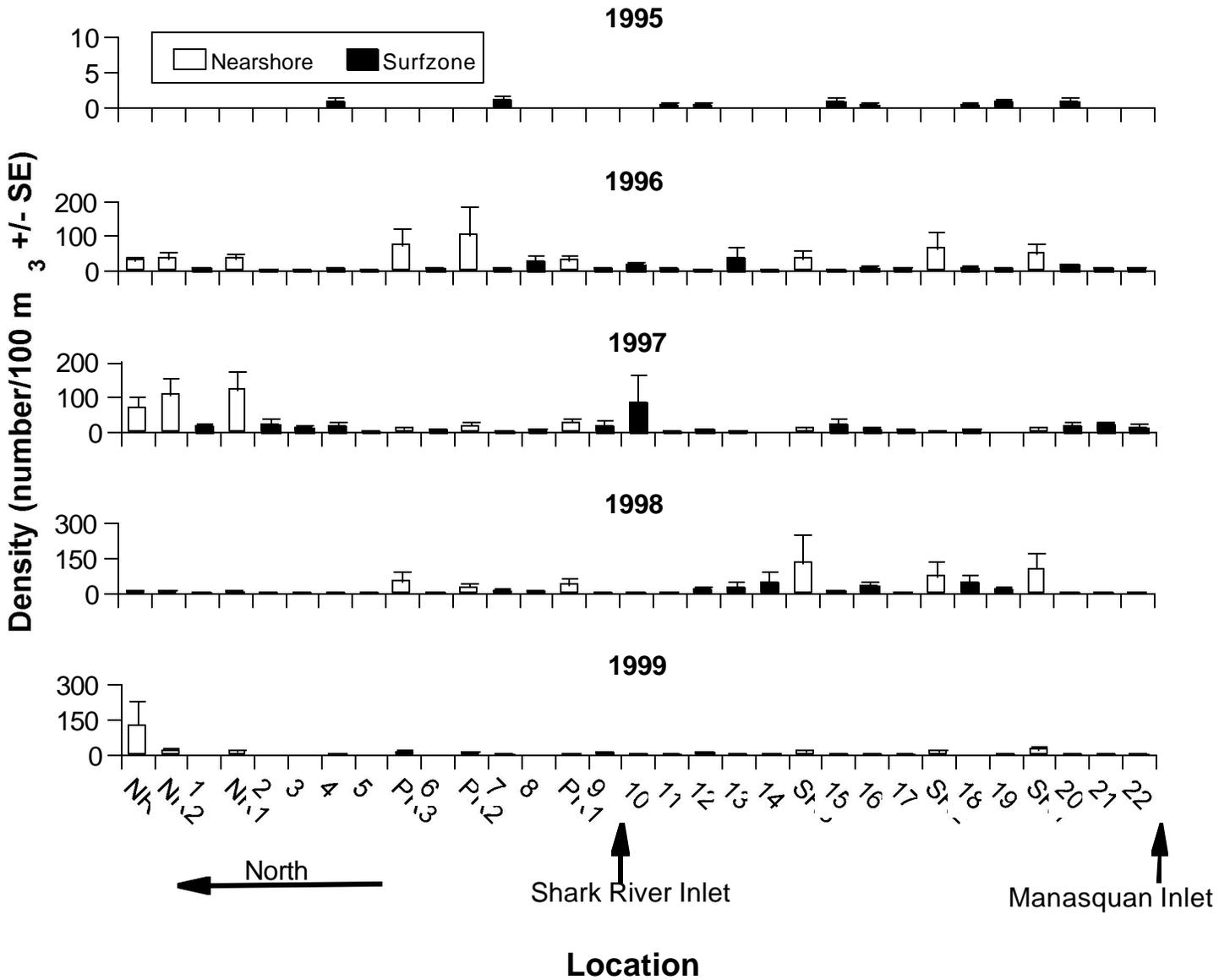
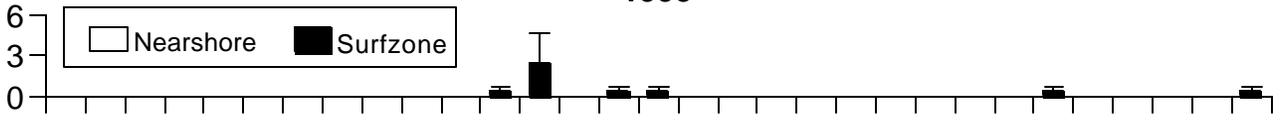


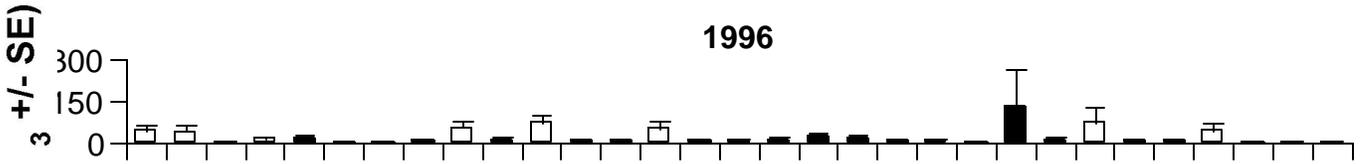
Figure 3-37. Average larval density for species of estuarine/ocean origin for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

# Ocean Species

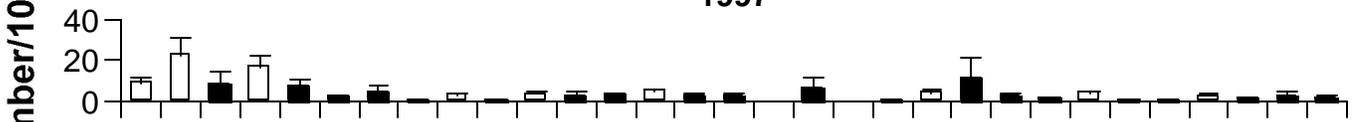
1995



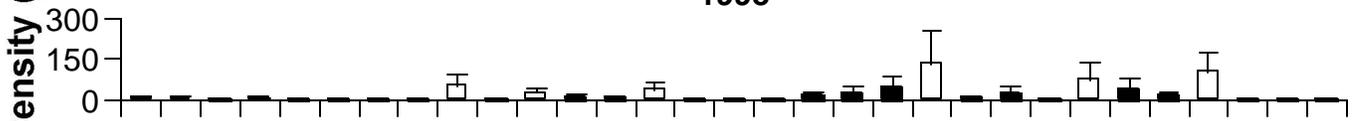
1996



1997



1998



1999

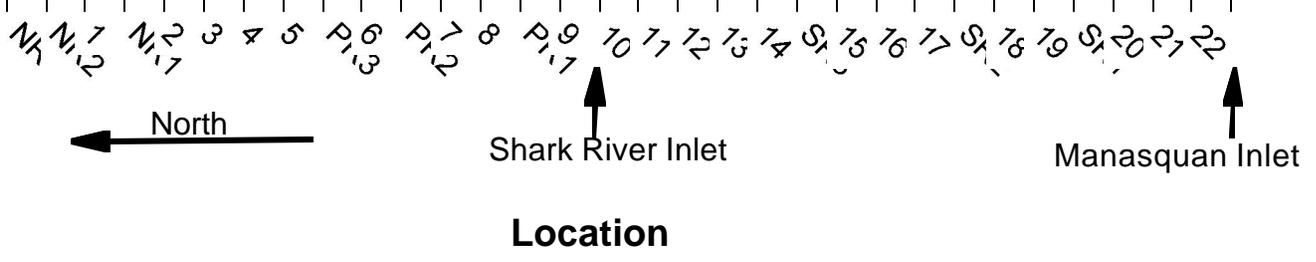
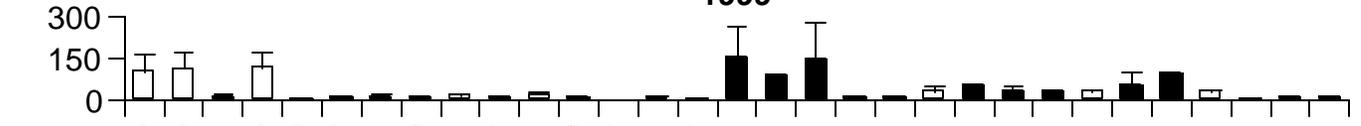


Figure 3-38. Average larval density for species of oceanic origin for nearshore and surfzone ichthyoplankton collected from northern New Jersey beaches. No nearshore samples in 1995. See Fig. 3-1 for sampling locations.

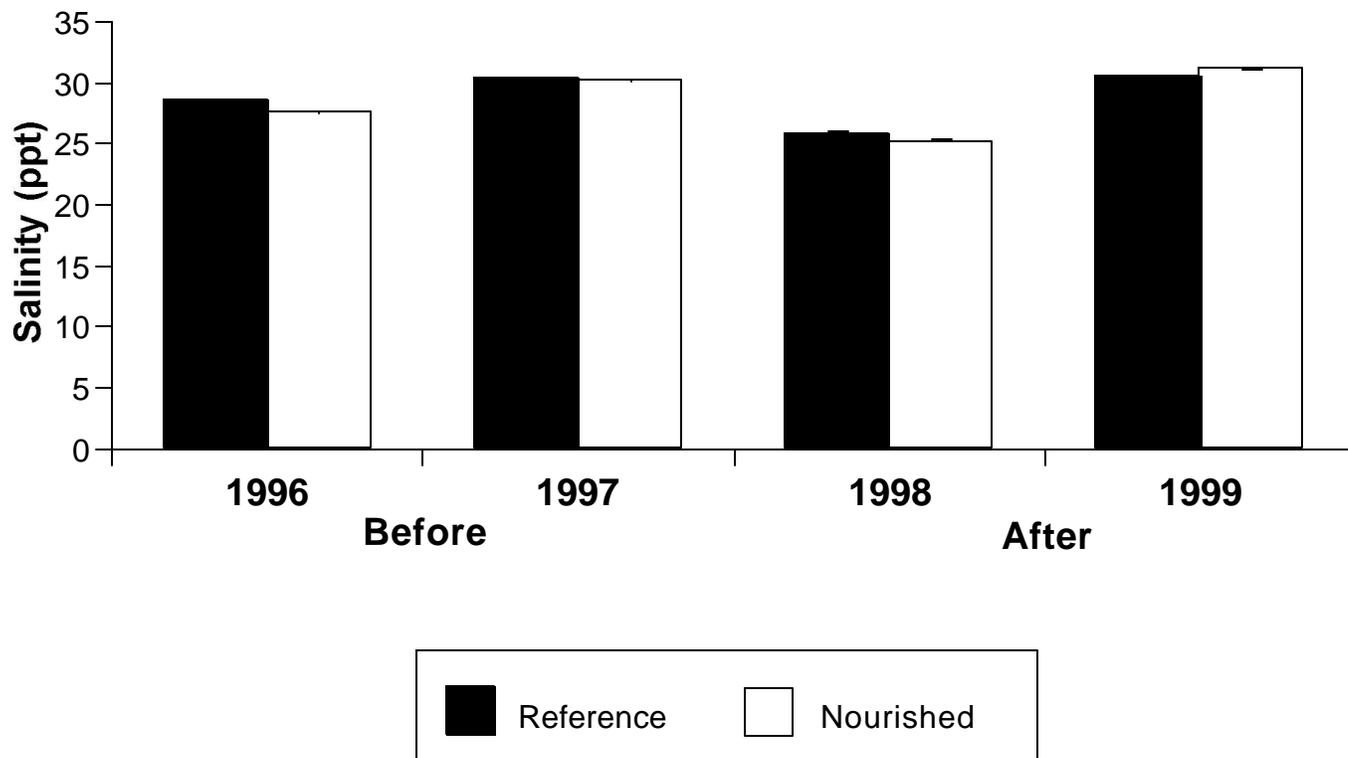


Figure 3-39. Average salinity (ppt +/- SE) for reference and nourished sites for ichthyoplankton sampling in northern New Jersey. See Fig 3-1 for sampling locations.

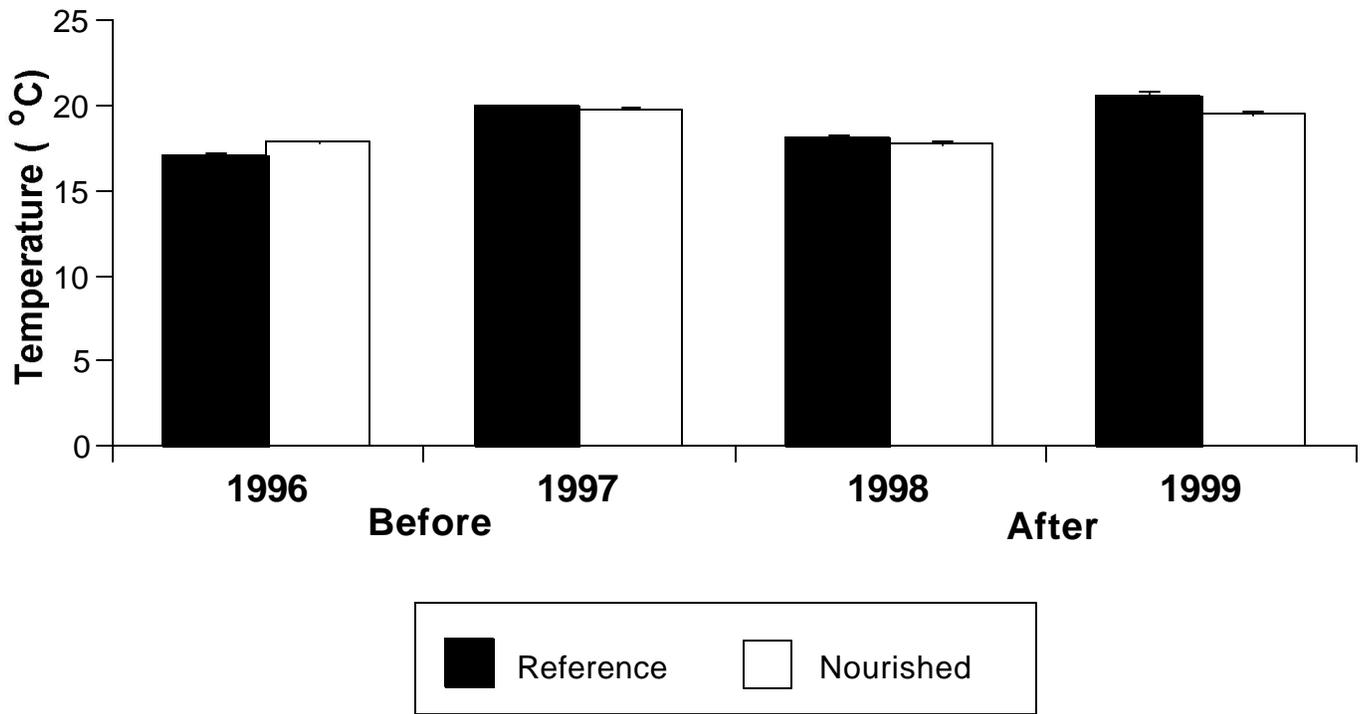


Figure 3-40. Average temperature ( $^{\circ}\text{C} \pm \text{SE}$ ) for reference and nourished sites for ichthyoplankton sampling in northern New Jersey. See Fig. 3-1 for sampling locations.

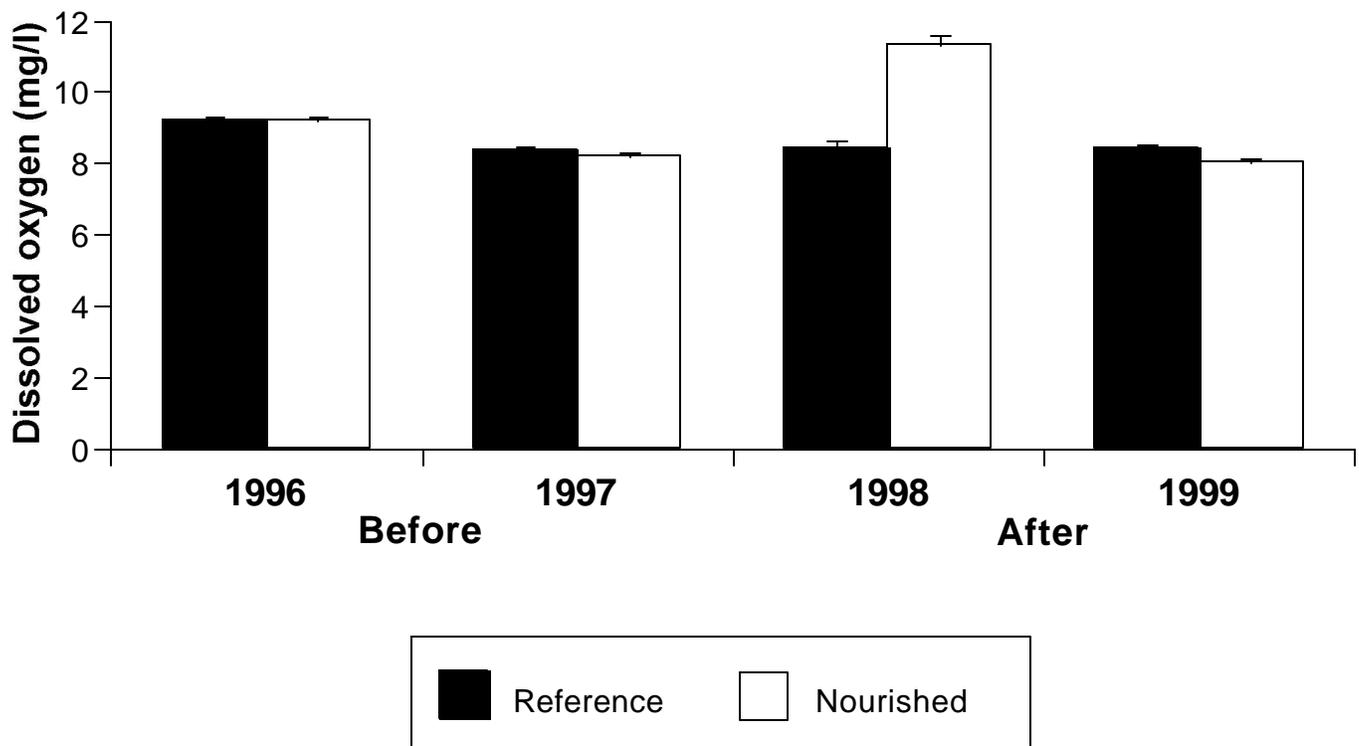


Figure 3-41. Average dissolved oxygen (mg/l +/- SE) for reference and nourished sites for ichthyoplankton sampling in northern New Jersey. See Fig. 3-1 for sampling locations.

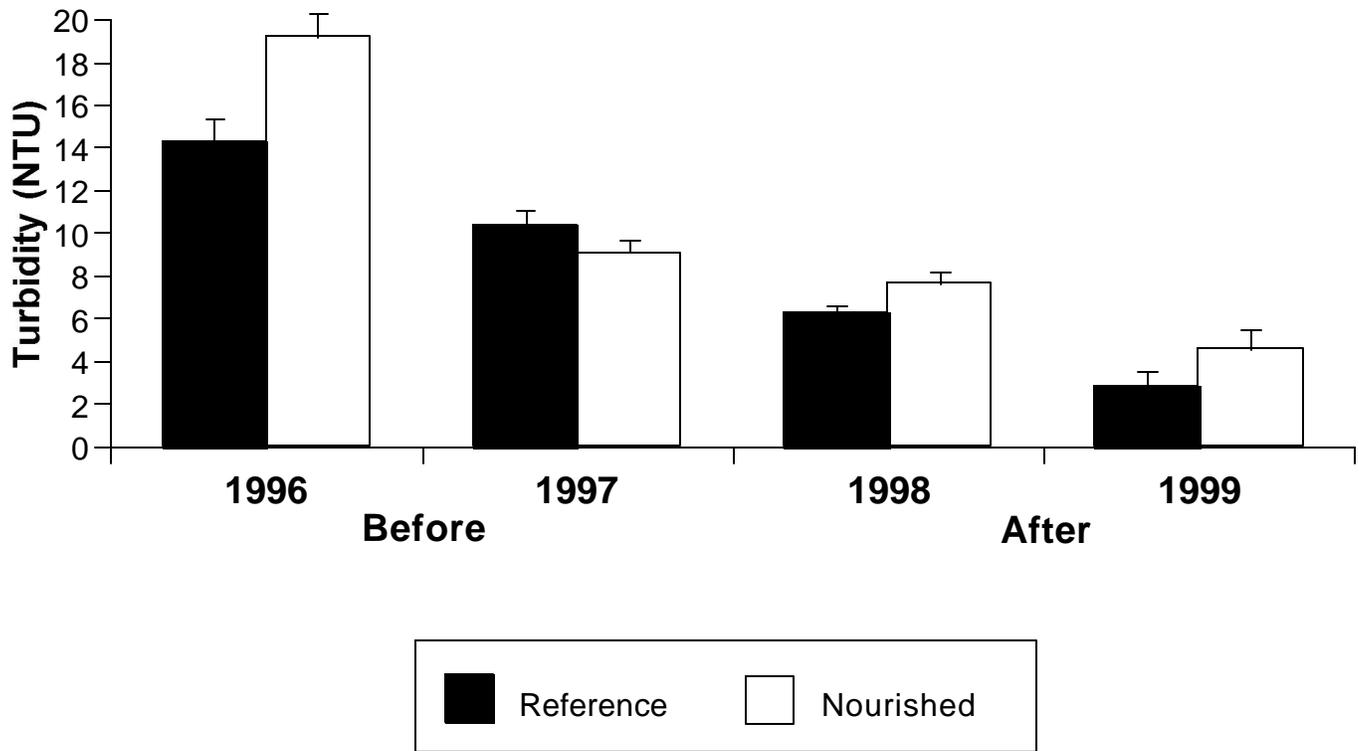


Figure 3-42. Average turbidity (NTU +/- SE) for reference and nourished sites for ichthyoplankton sampling in northern New Jersey. See Fig. 3-1 for sampling locations.

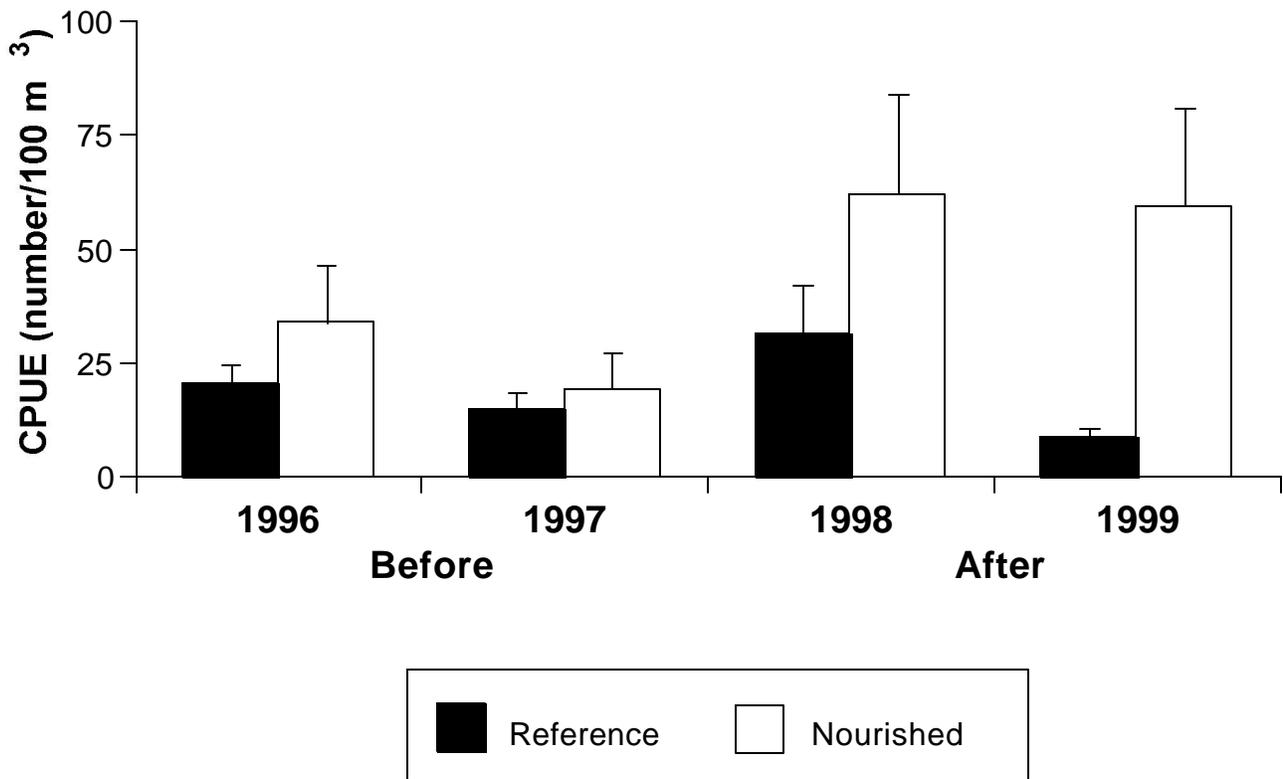


Figure 3-43. Catch per unit effort (CPUE - number/100m<sup>3</sup> +/- SE), at reference and nourished sites for 1996 - 1999.

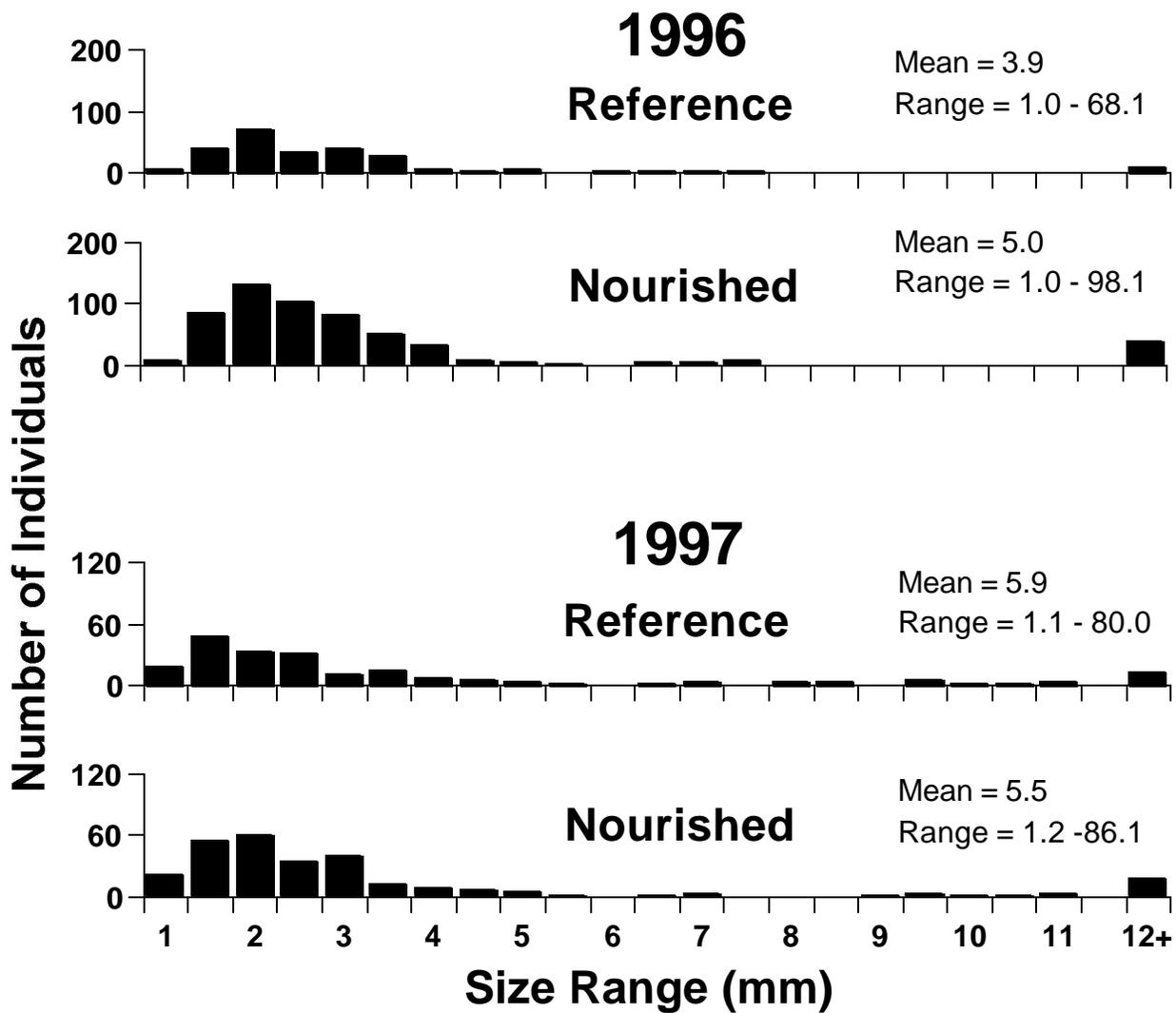


Figure 3-44. Composite lengths for surfzone ichthyoplankton samples from northern New Jersey beaches before nourishment (1996 - 1997) from reference and nourished sites.

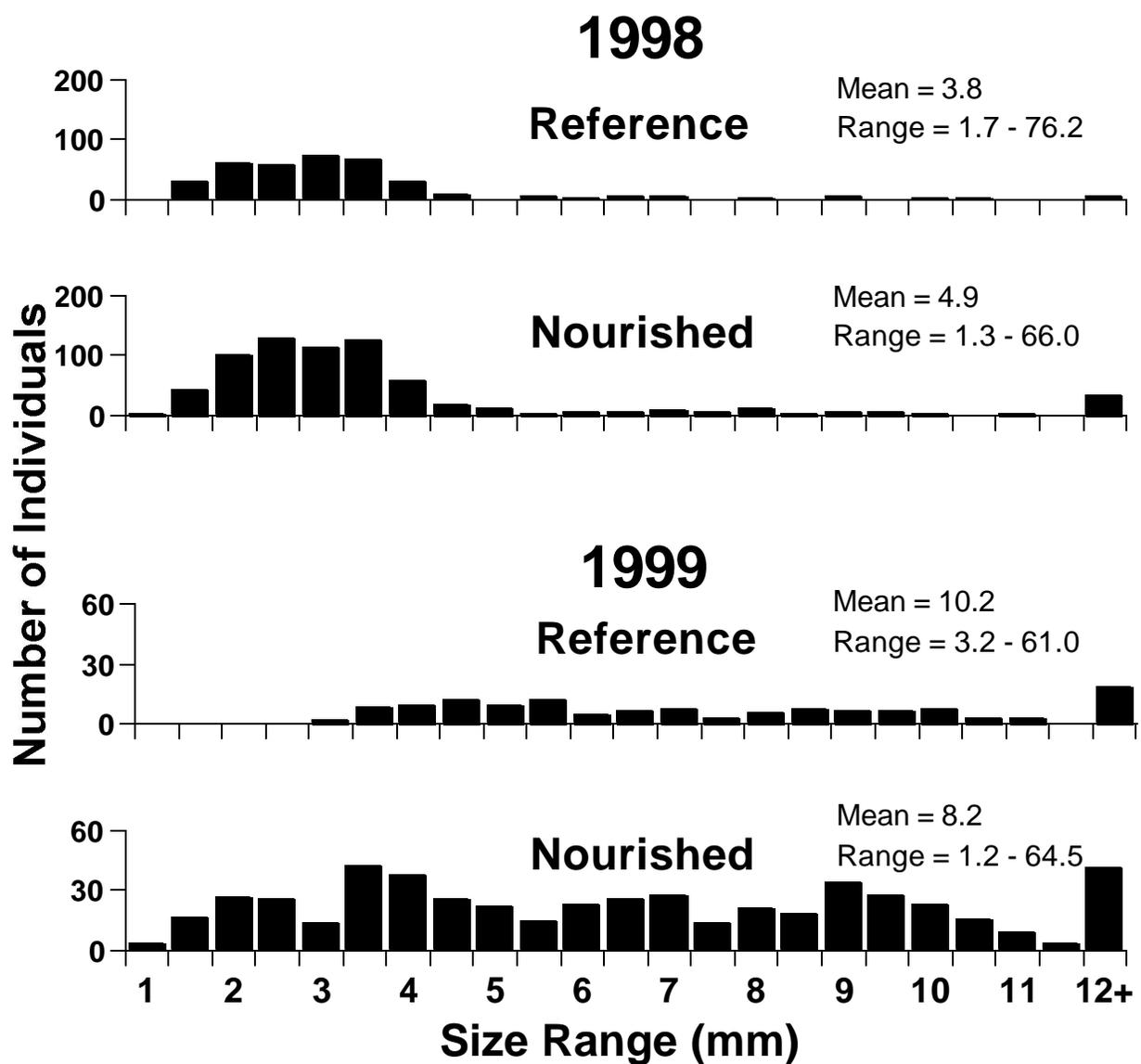


Figure 3-45. Composite lengths for surfzone ichthyoplankton samples from northern New Jersey beaches after nourishment (1998 - 1999) from reference and nourished sites.

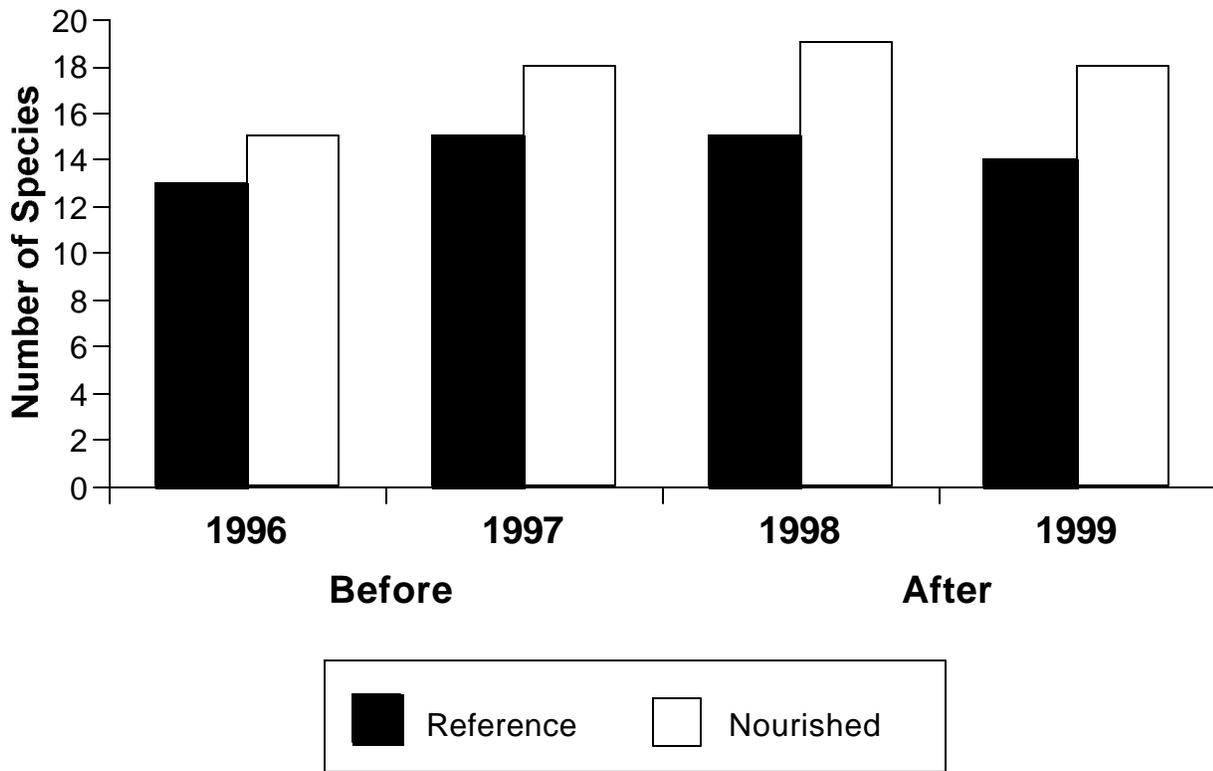


Figure 3-46. Species richness, as expressed as total number of species, at reference and nourished sites during 1996 - 1999.