

Figure 1. Puget Sound: Central and South Basin
Pebble Beach Sample Sites: 1999

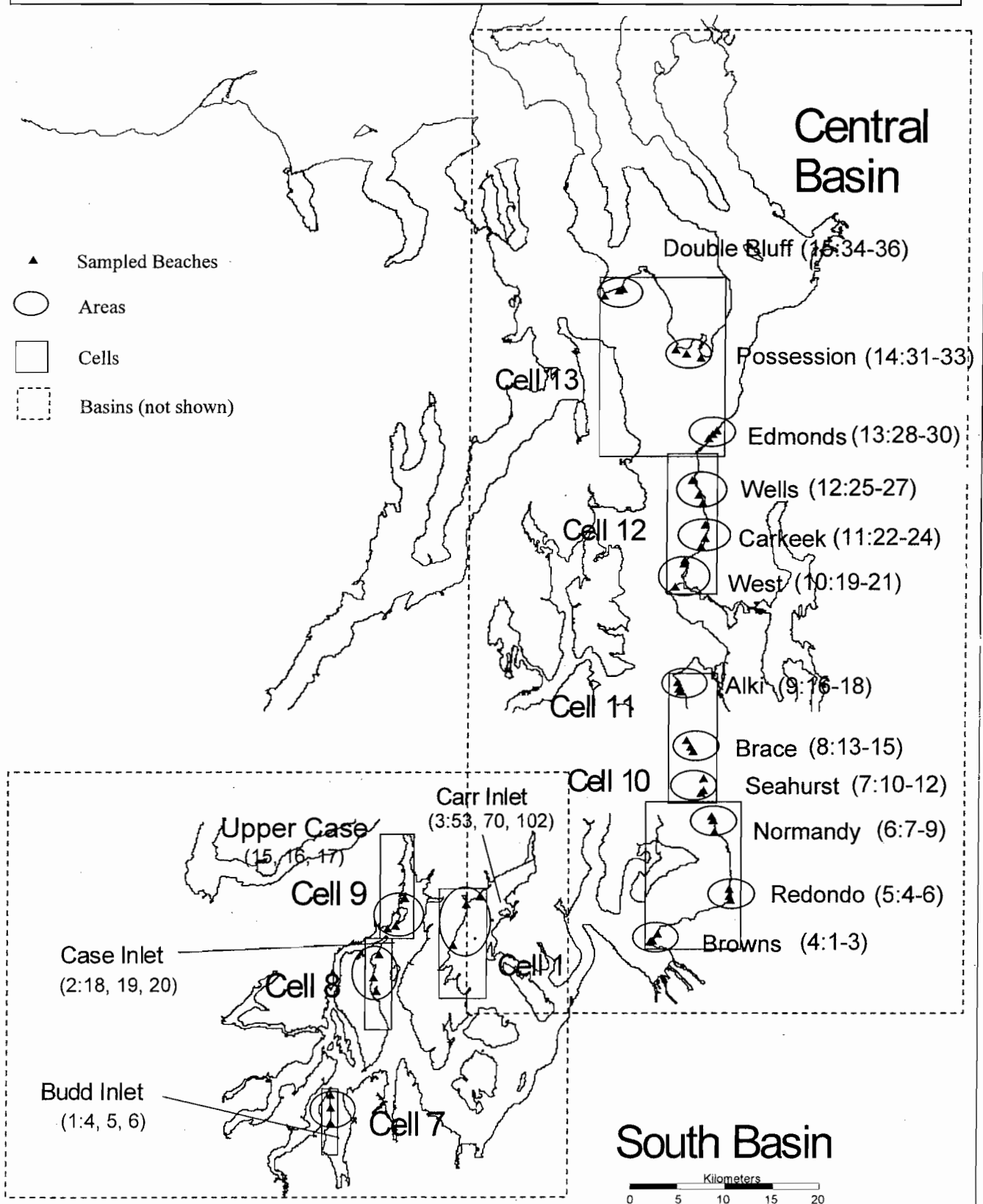


Figure 2. Puget Sound: Central and South Basin
Sea surface salinity and temperature 1999 sample sites

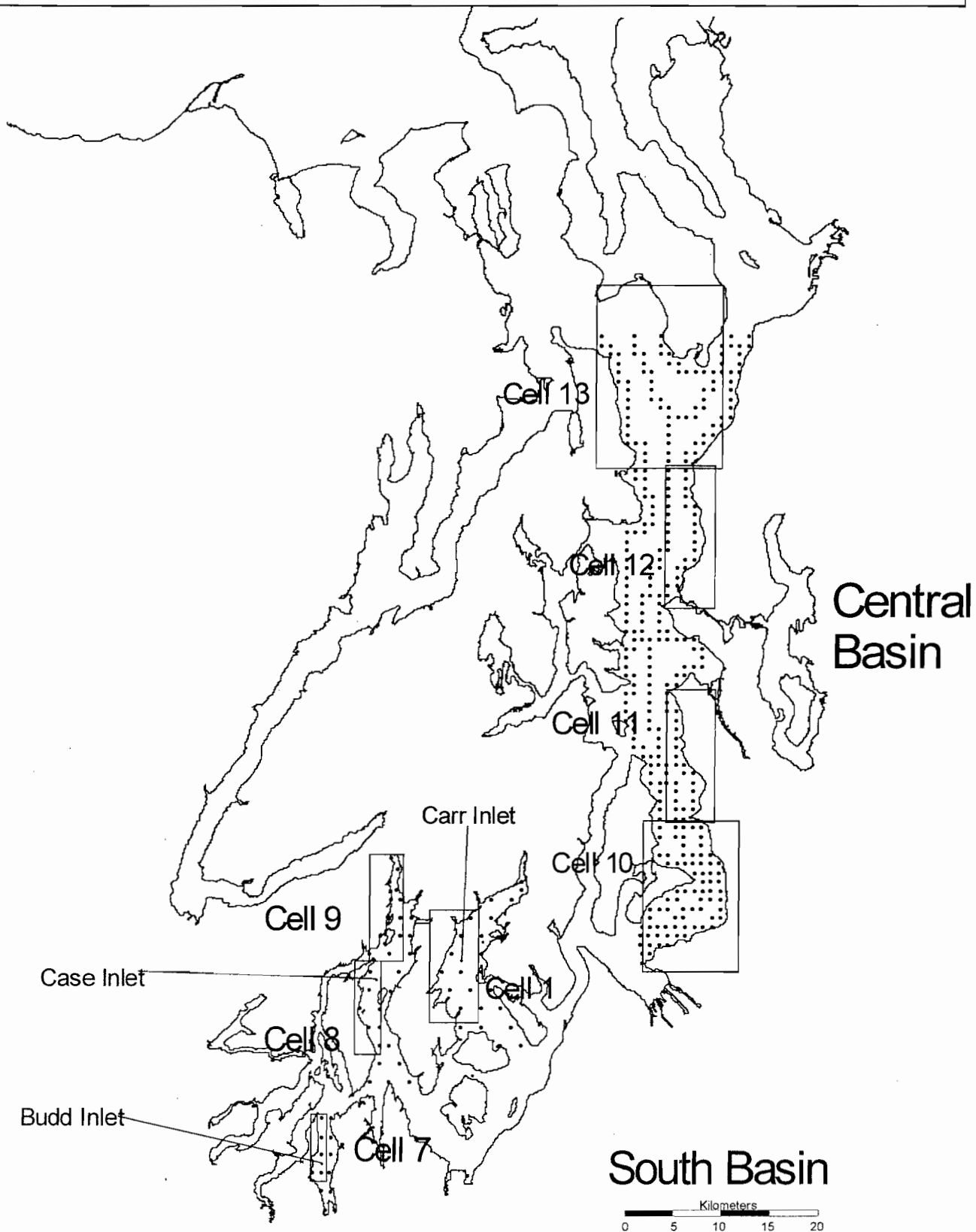


Figure 3. Substrate size distributions in 1999 were determined from .25 m² quadrats (3) photographed along a 50 m horizontal transect at MLLW. Particle sizes were measured at each grid intersection and binned according to the Wentworth classification.

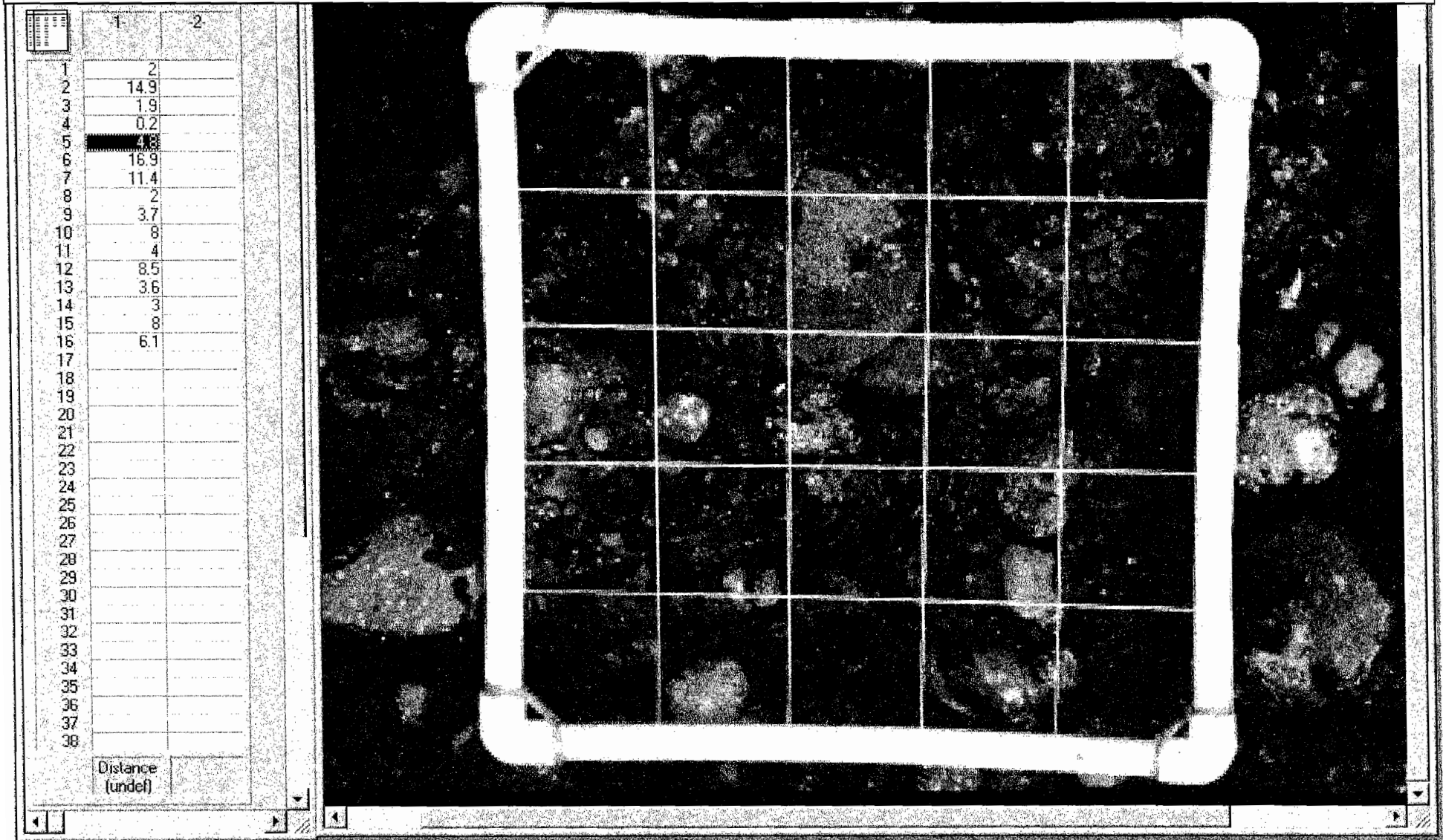


Figure 4. Sea surface temperature and salinity plots for Carr Inlet, June 10, 1999.

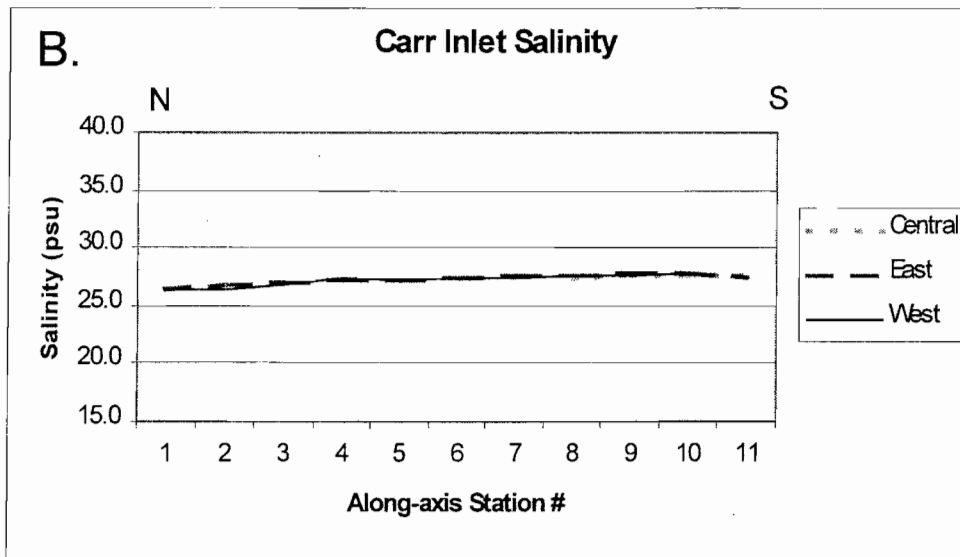
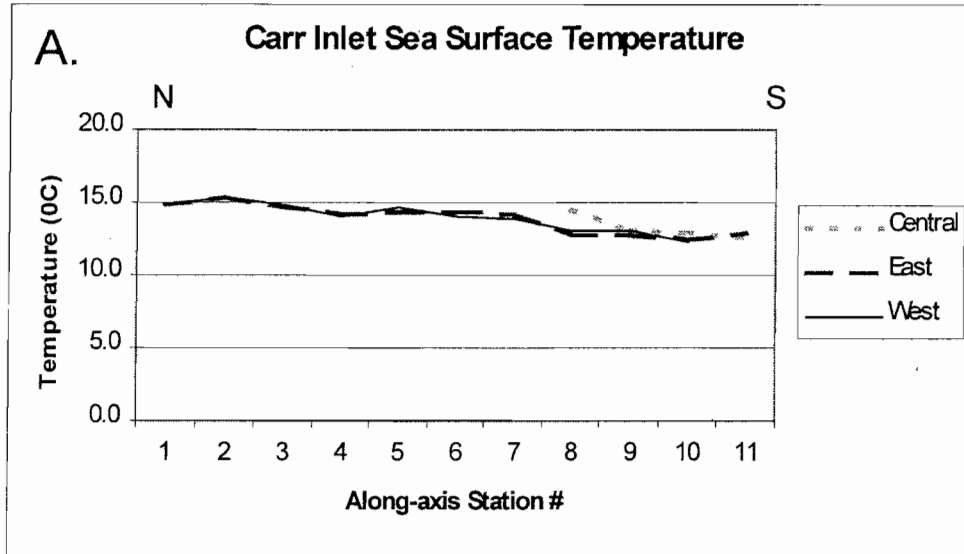


Figure 5. Sea surface temperature and salinity plots for Case Inlet, June 9, 1999.

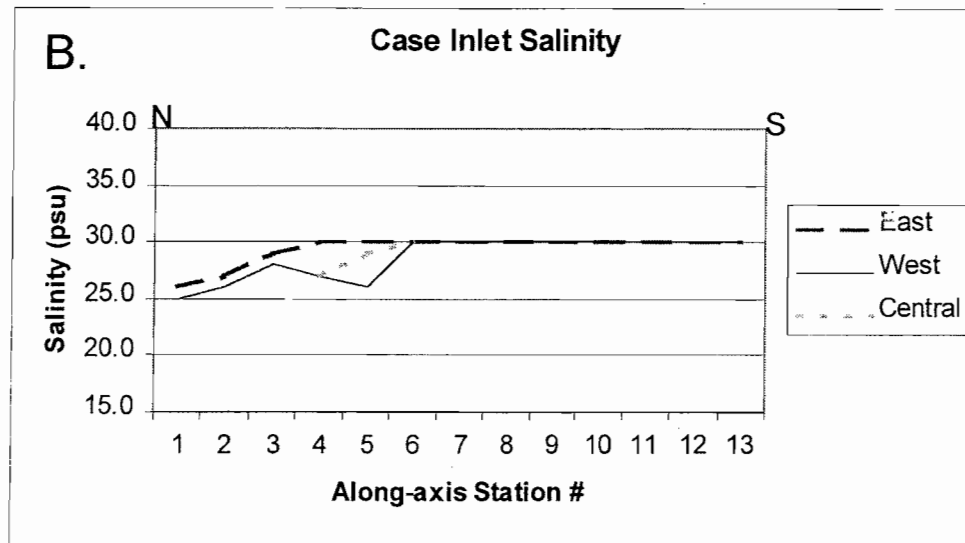
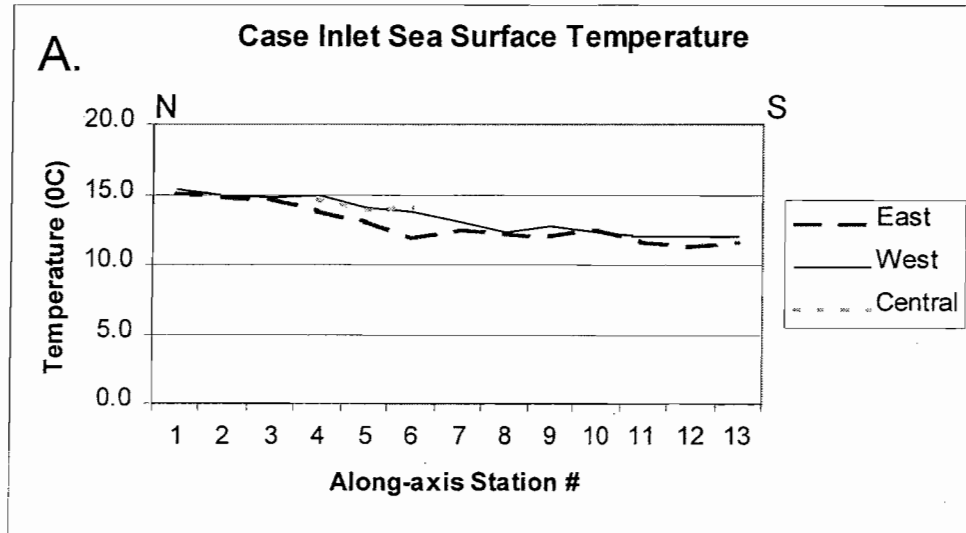


Figure 6. Sea surface temperature and salinity plots for Budd Inlet, June 7, 1999.

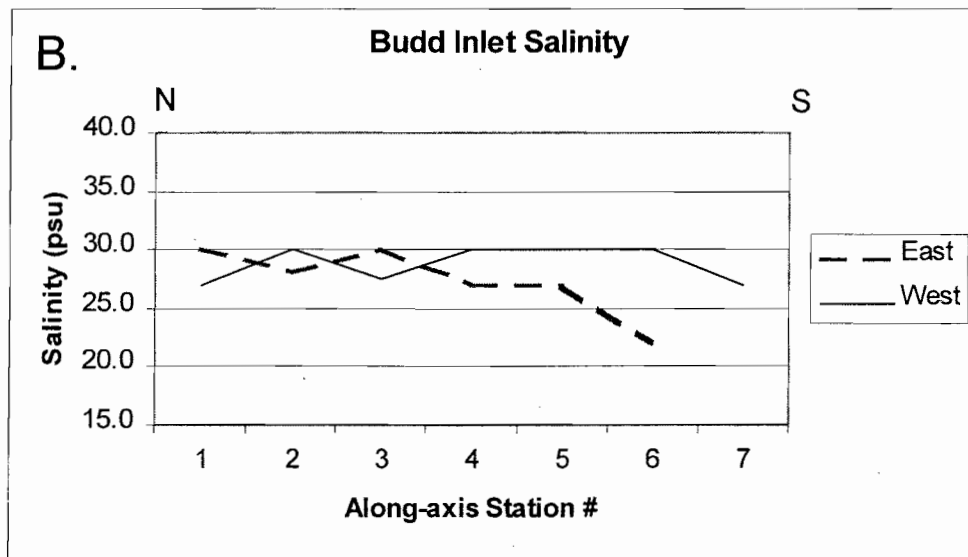
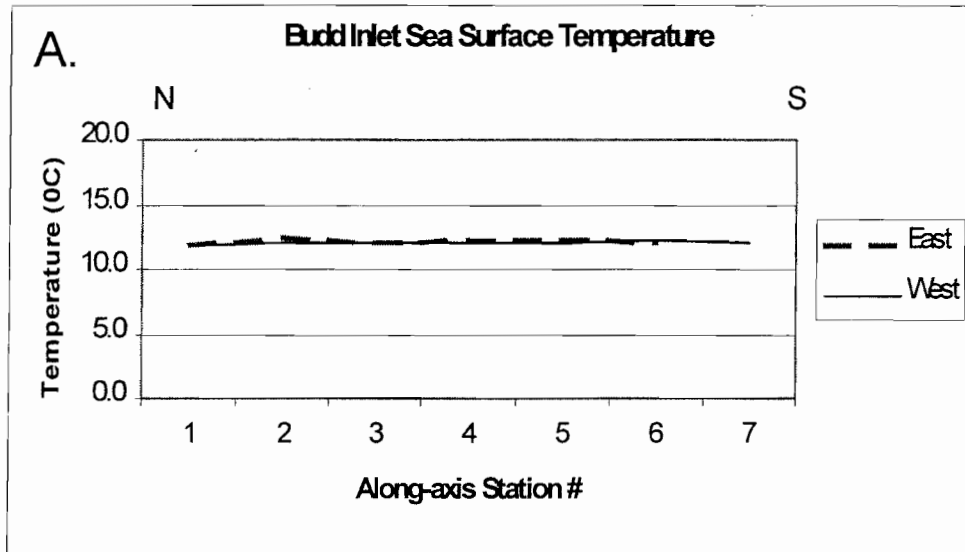


Figure 7. Sea surface temperature and salinity plots for the Central Basin, June 5-7, 1999.

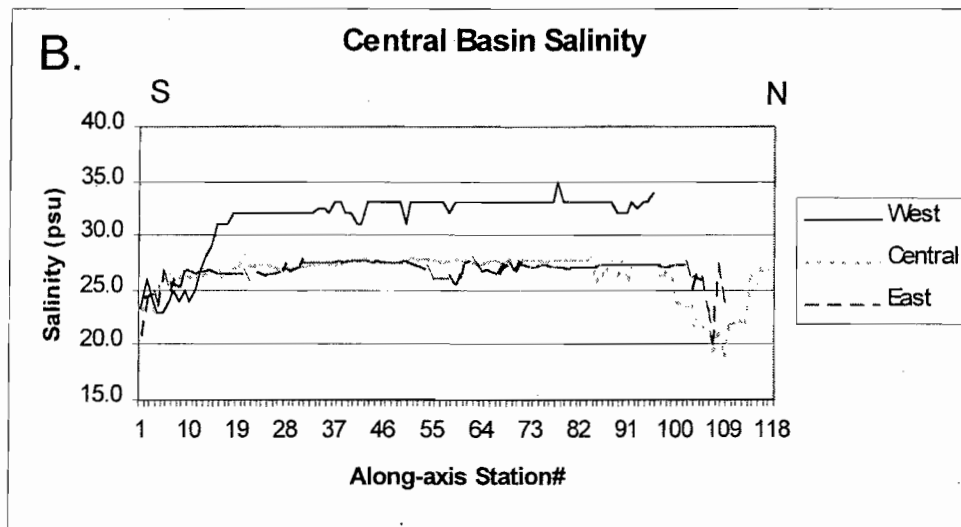
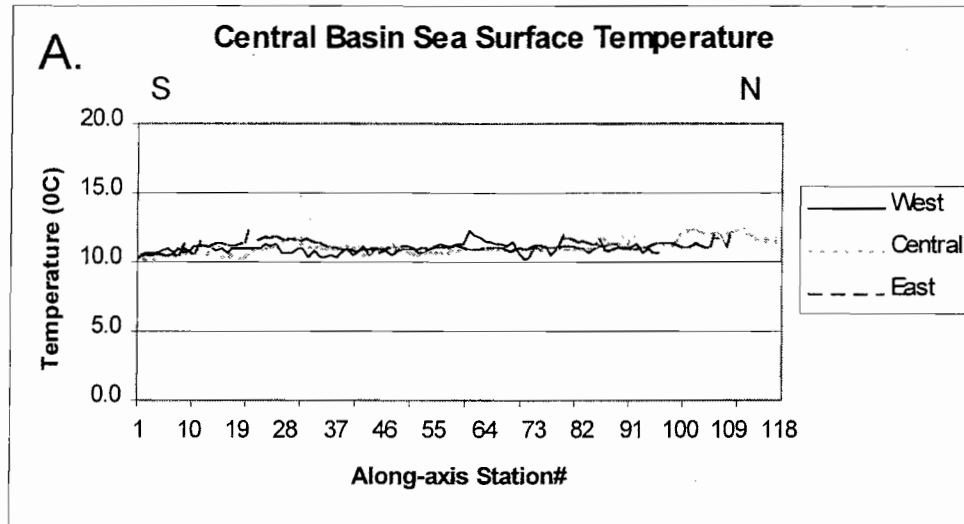


Figure 8. Contour plot of sea surface temperature in June 1999 for the Central and South basins of Puget Sound.

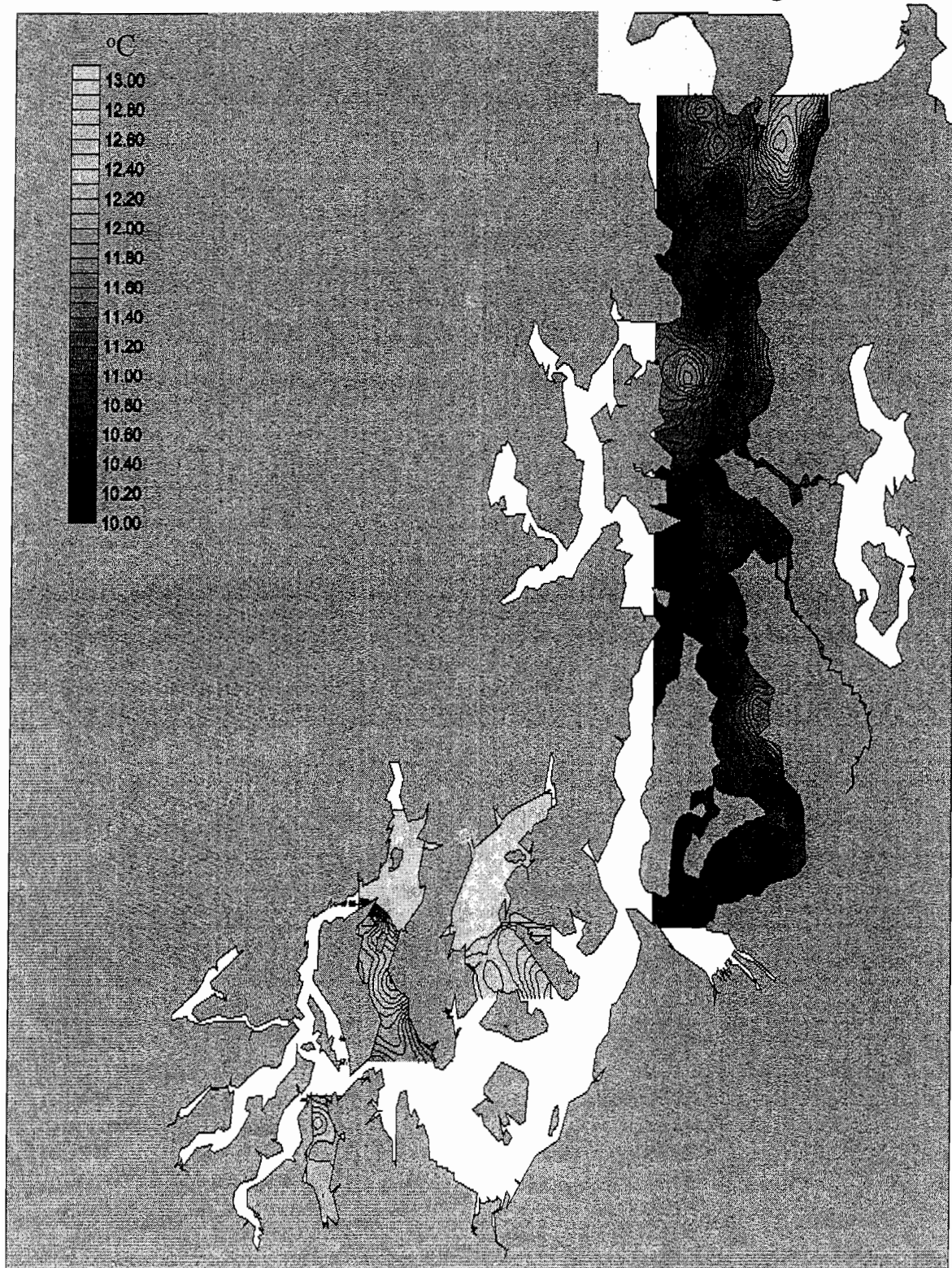
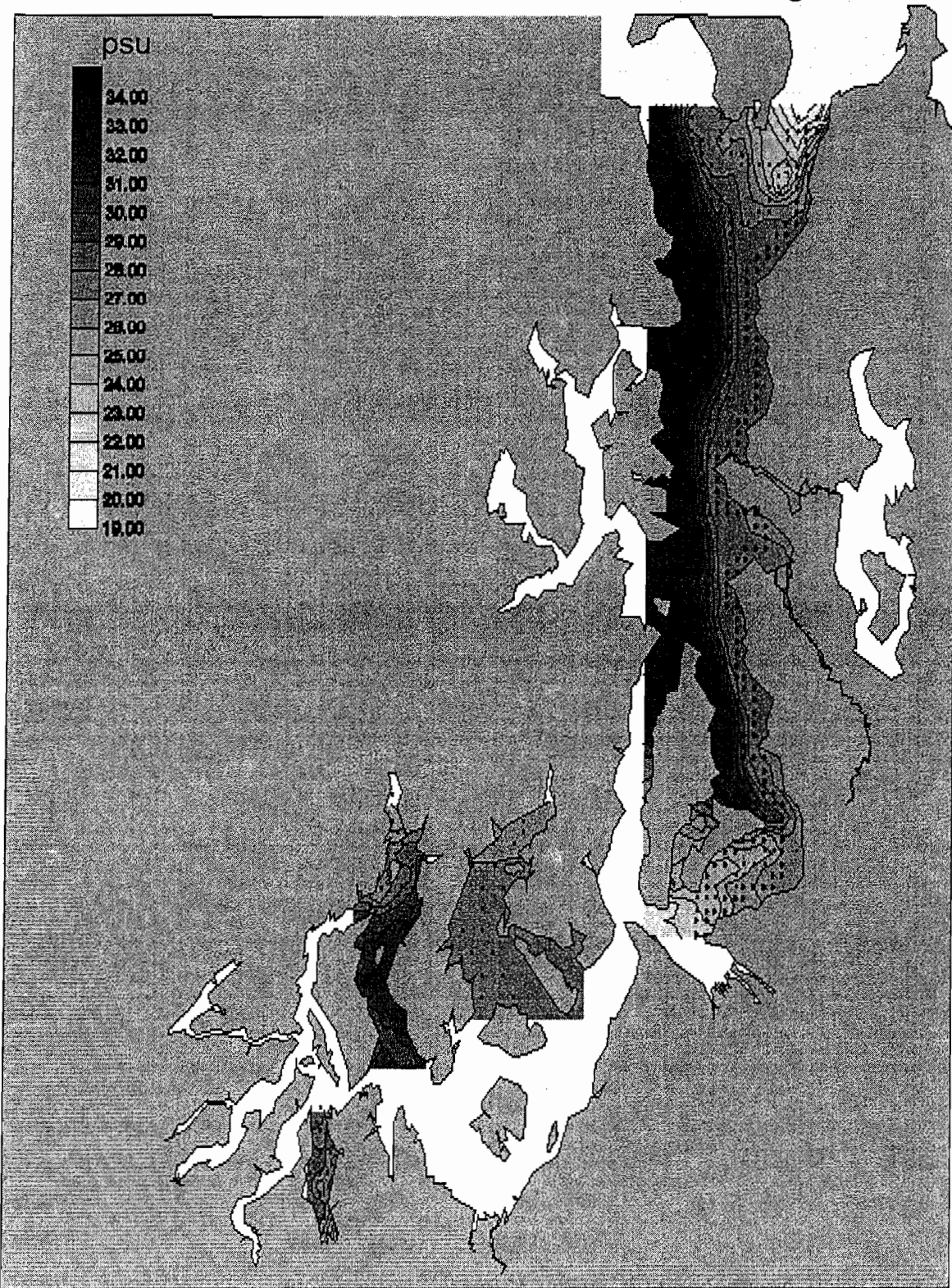
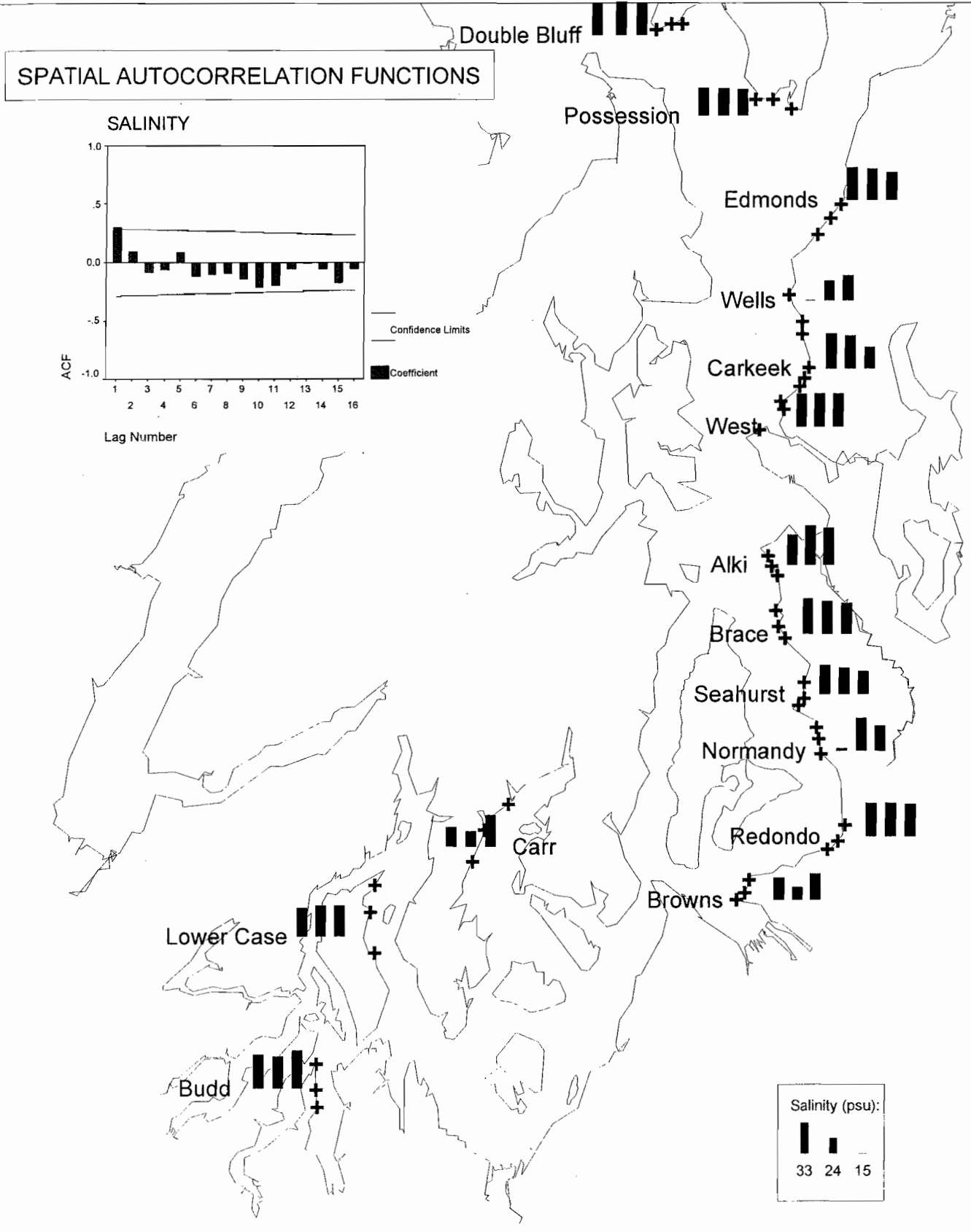


Figure 9. Contour plot of sea surface salinity in June 1999 for the Central and South basins of Puget Sound.

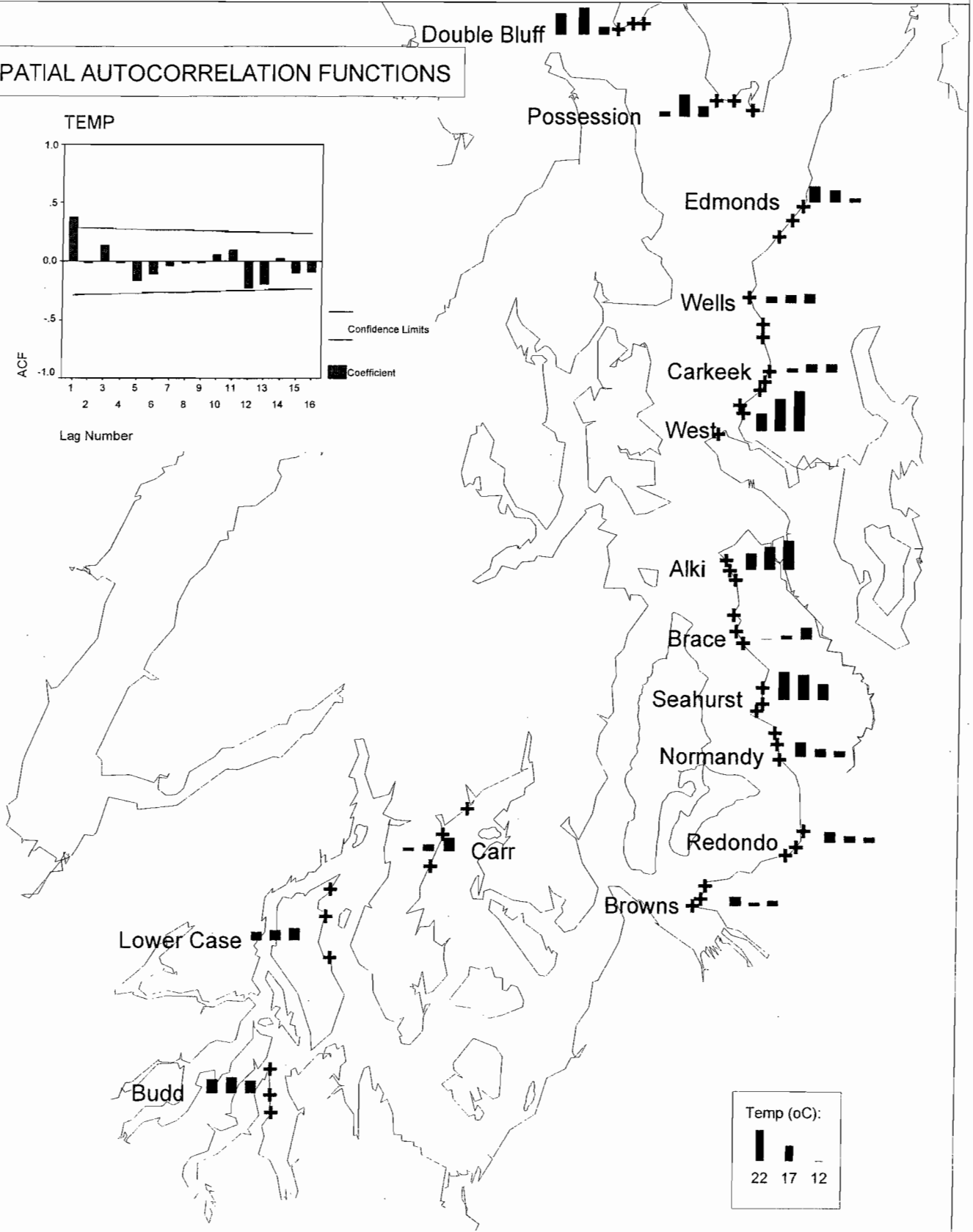
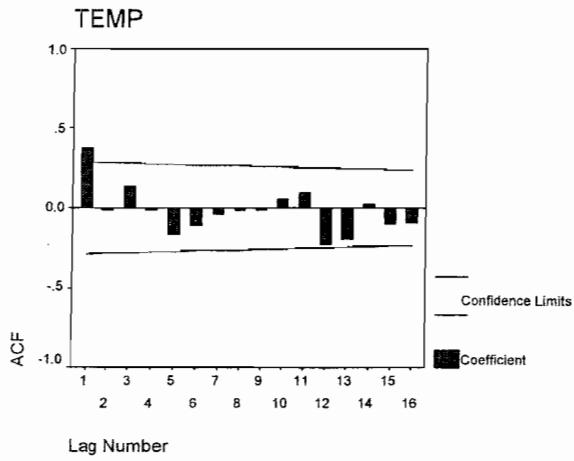


**Figure 10. Spatial distribution of pore water salinity
Puget Sound June 1999: Central and South Basin on
Low Zone Pebble Beaches**



**Figure 11. Spatial distribution of pore water temperature
Puget Sound 1999: Central and South Basin on
Low Zone Pebble Beaches**

SPATIAL AUTOCORRELATION FUNCTIONS



**Figure 12. Spatial distribution of slope
Puget Sound 1999: Central and South Basin on
Low Zone Pebble Beaches**

SPATIAL AUTOCORRELATION FUNCTIONS

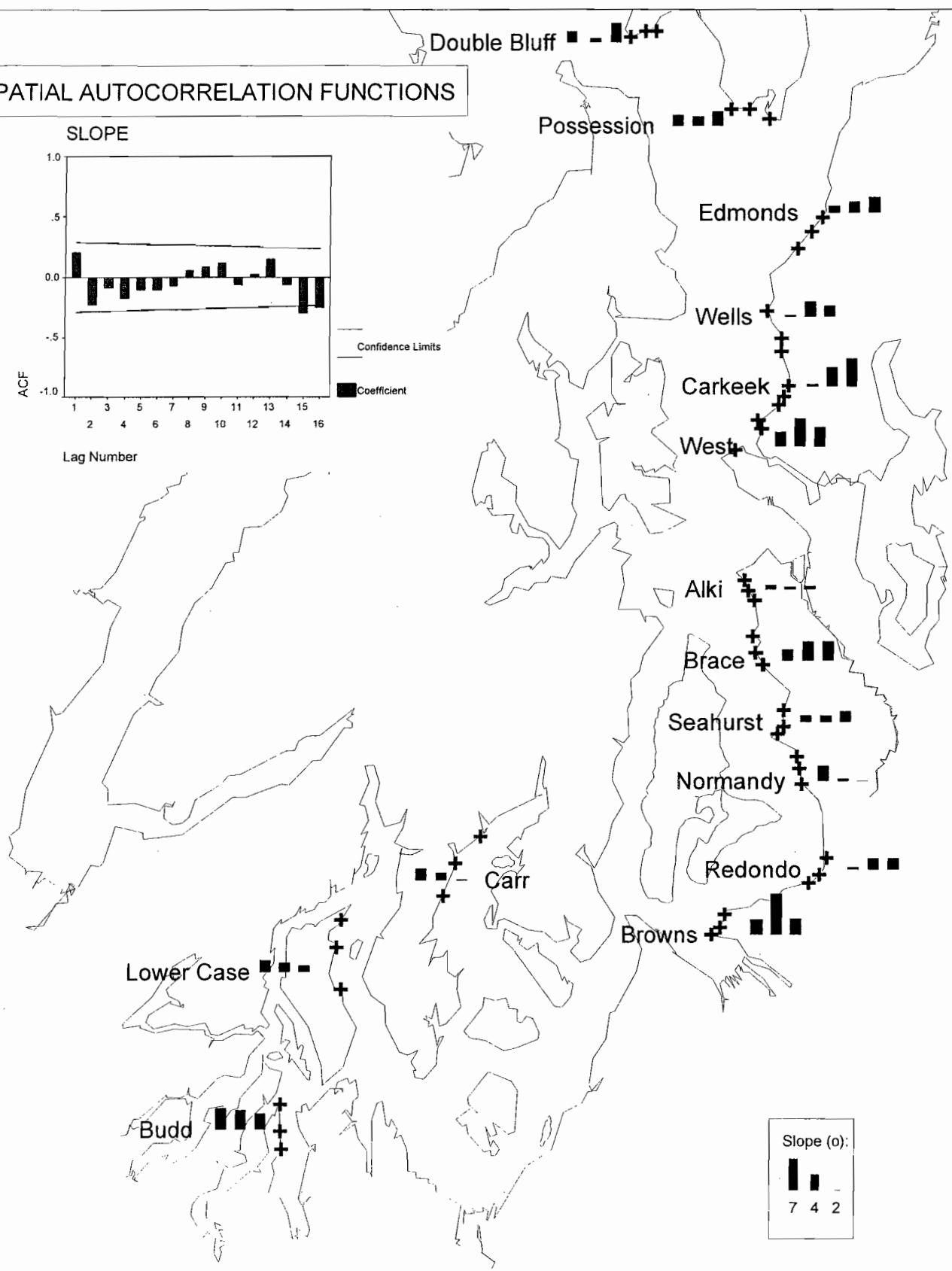
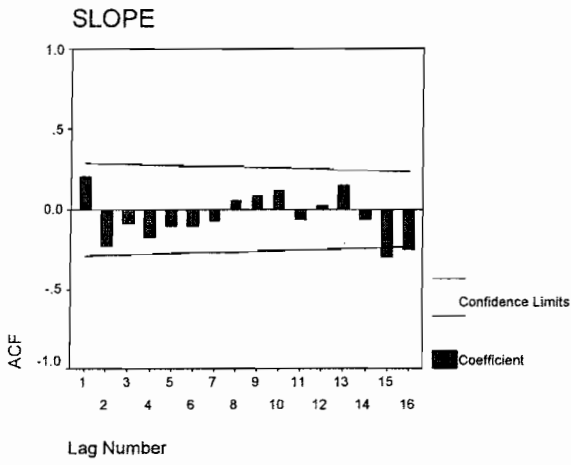


Figure 13. Spatial distribution of wave energy on sampled beaches in Puget Sound, 1999: Central and South Basin on Low Zone Pebble Beaches

SPATIAL AUTOCORRELATION FUNCTIONS

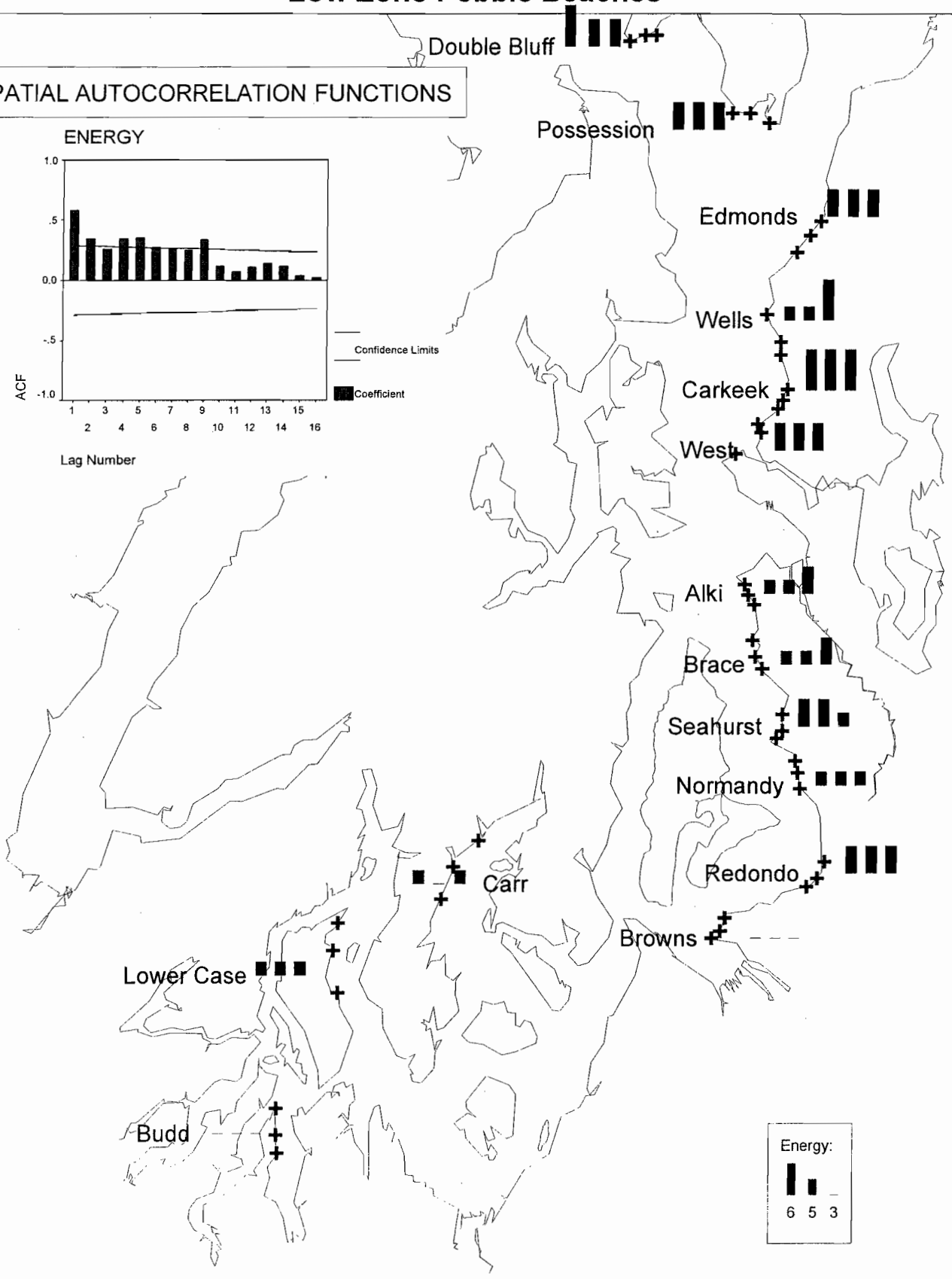
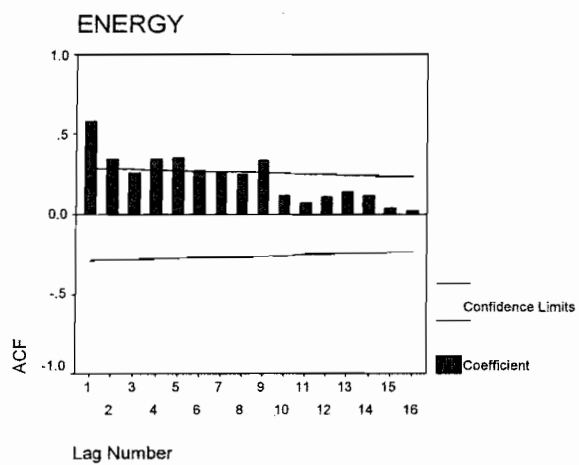


Figure 14. Spatial distribution of sand on sampled beaches in Puget Sound, 1999: Central and South Basin on Low Zone Pebble Beaches

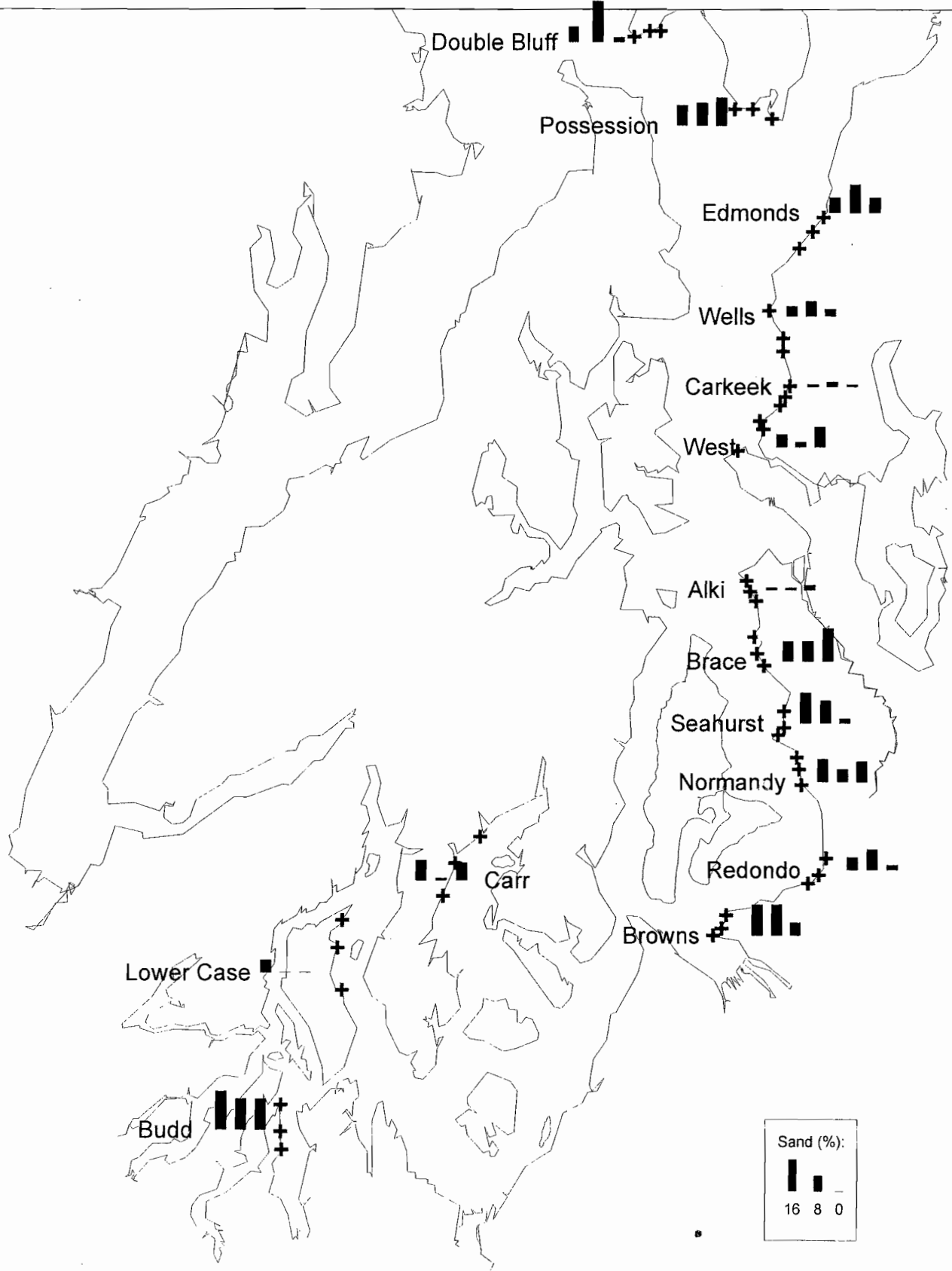


Figure 15. Spatial distribution of pebbles on sampled beaches in Puget Sound, 1999: Central and South Basin on Low Zone Pebble Beaches

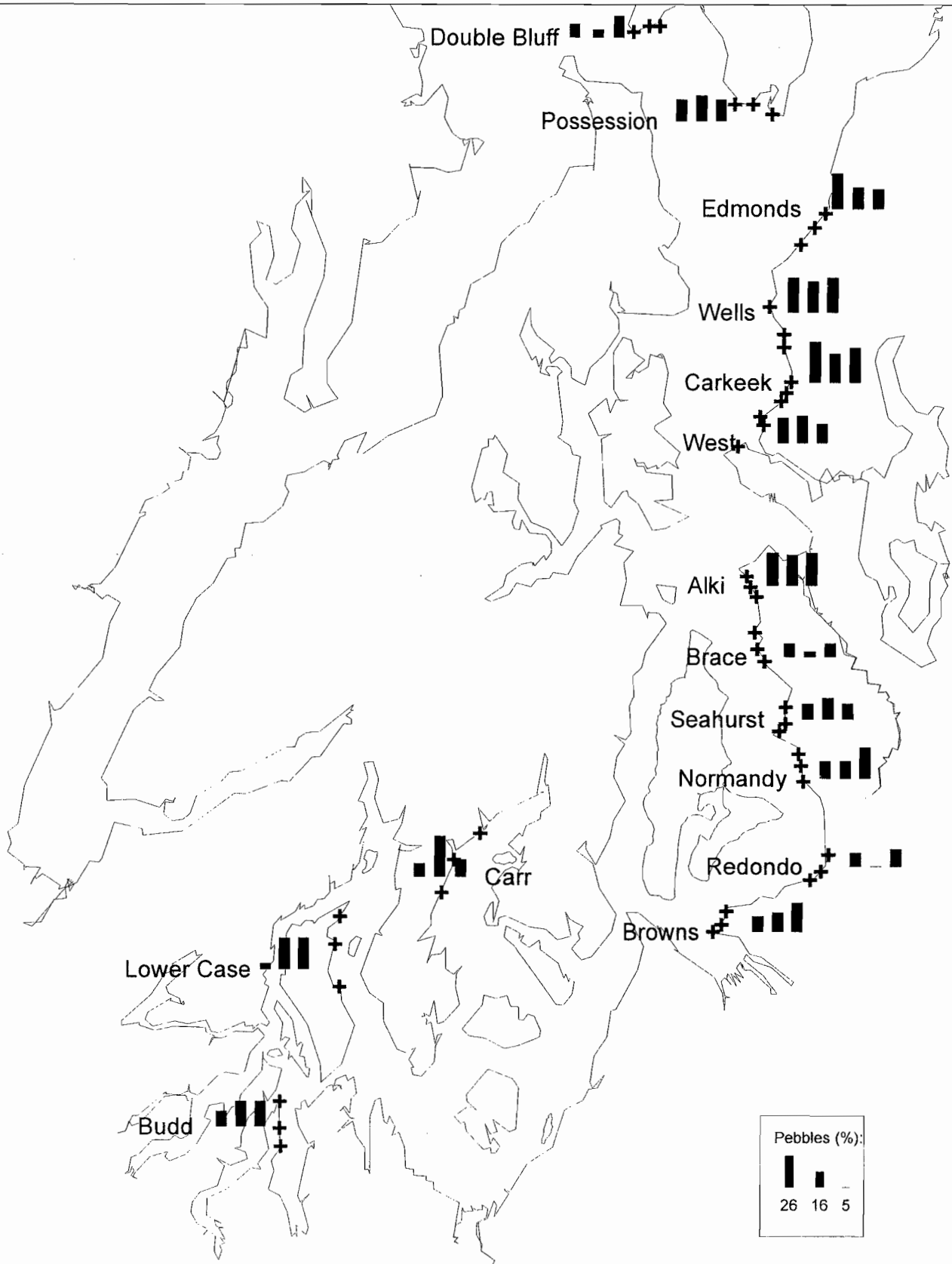
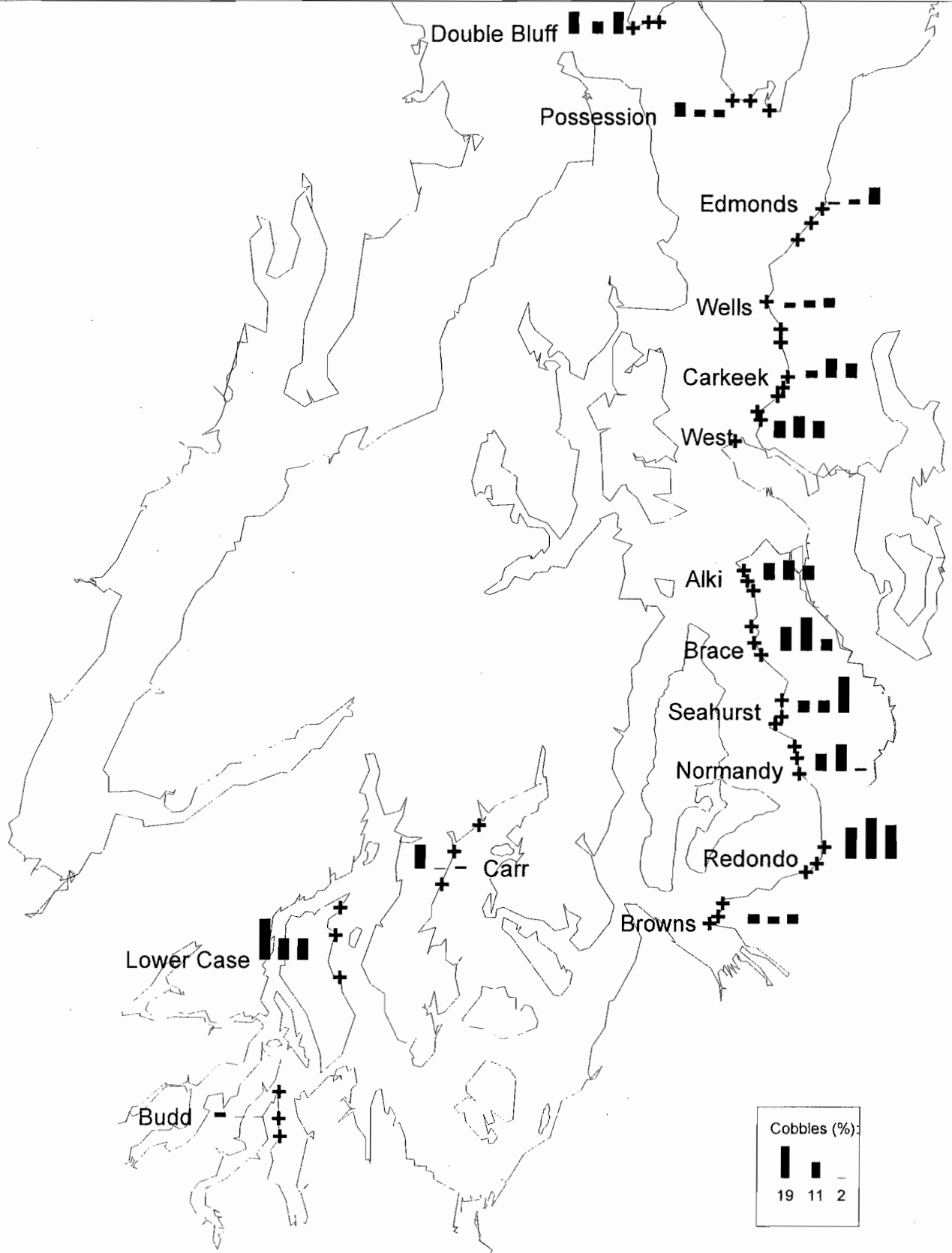
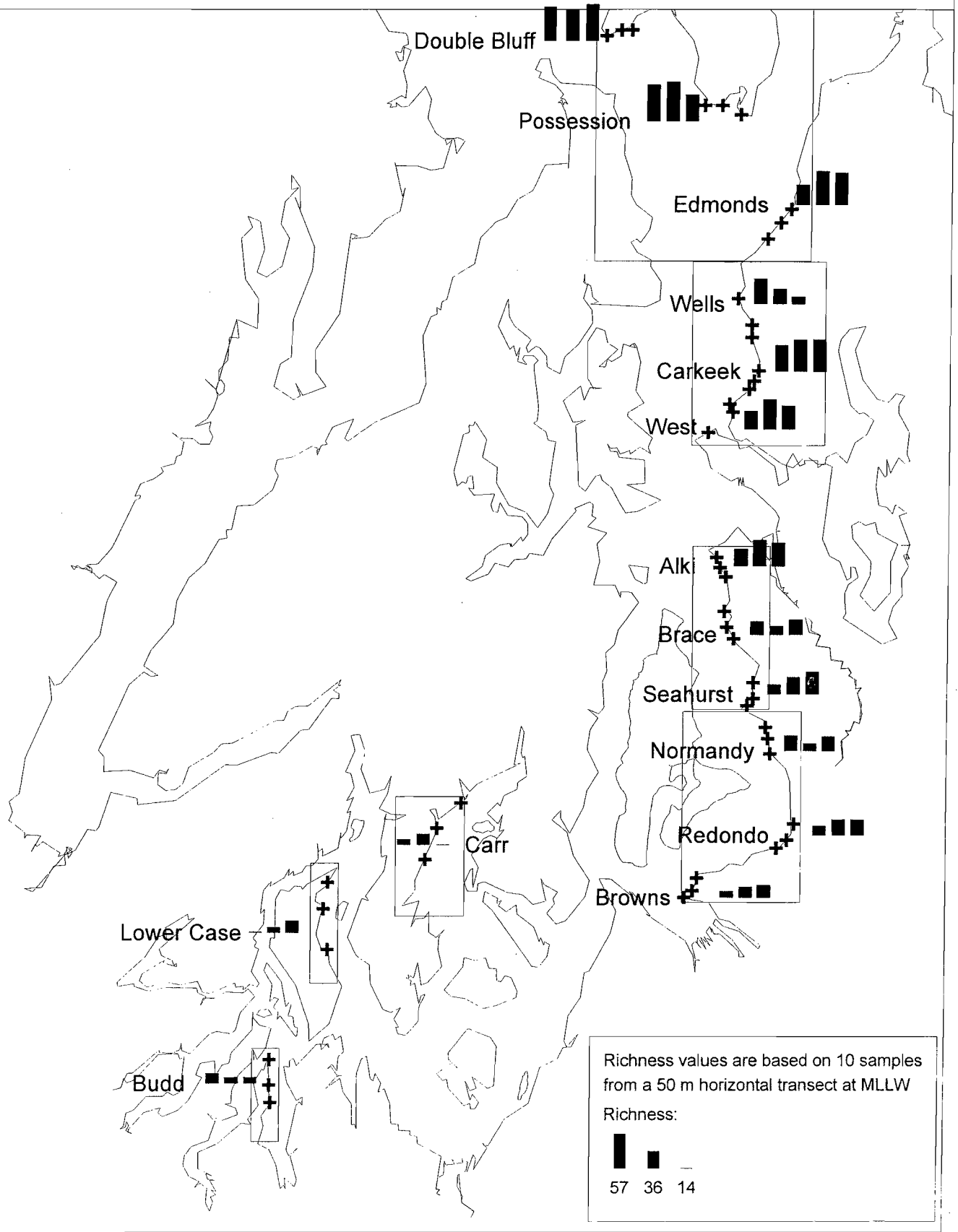


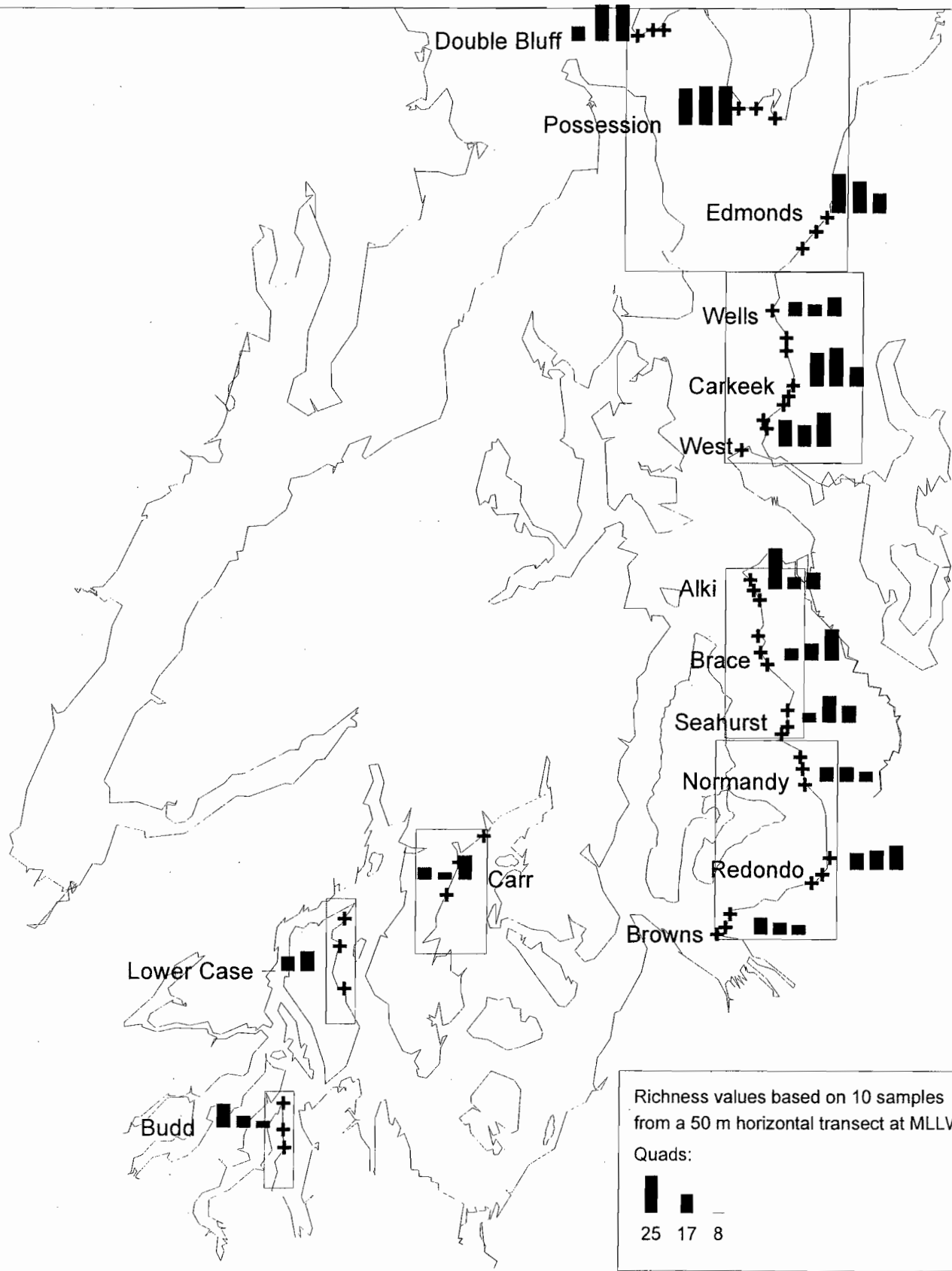
Figure 16. Spatial distribution of cobbles on sampled beaches in Puget Sound, 1999: Central and South Basin on Low Zone Pebble Beaches



**Figure 17. Spatial distribution of species diversity
Puget Sound 1999: Central and South Basin on
Low Zone Pebble Beaches**



**Figure 18. Spatial distribution of species diversity (quads)
Puget Sound 1999: Central and South Basin on
Low Zone Pebble Beaches**



**Figure 19. Spatial distribution of species diversity (cores)
Puget Sound 1999: Central and South Basin on
Low Zone Pebble Beaches**

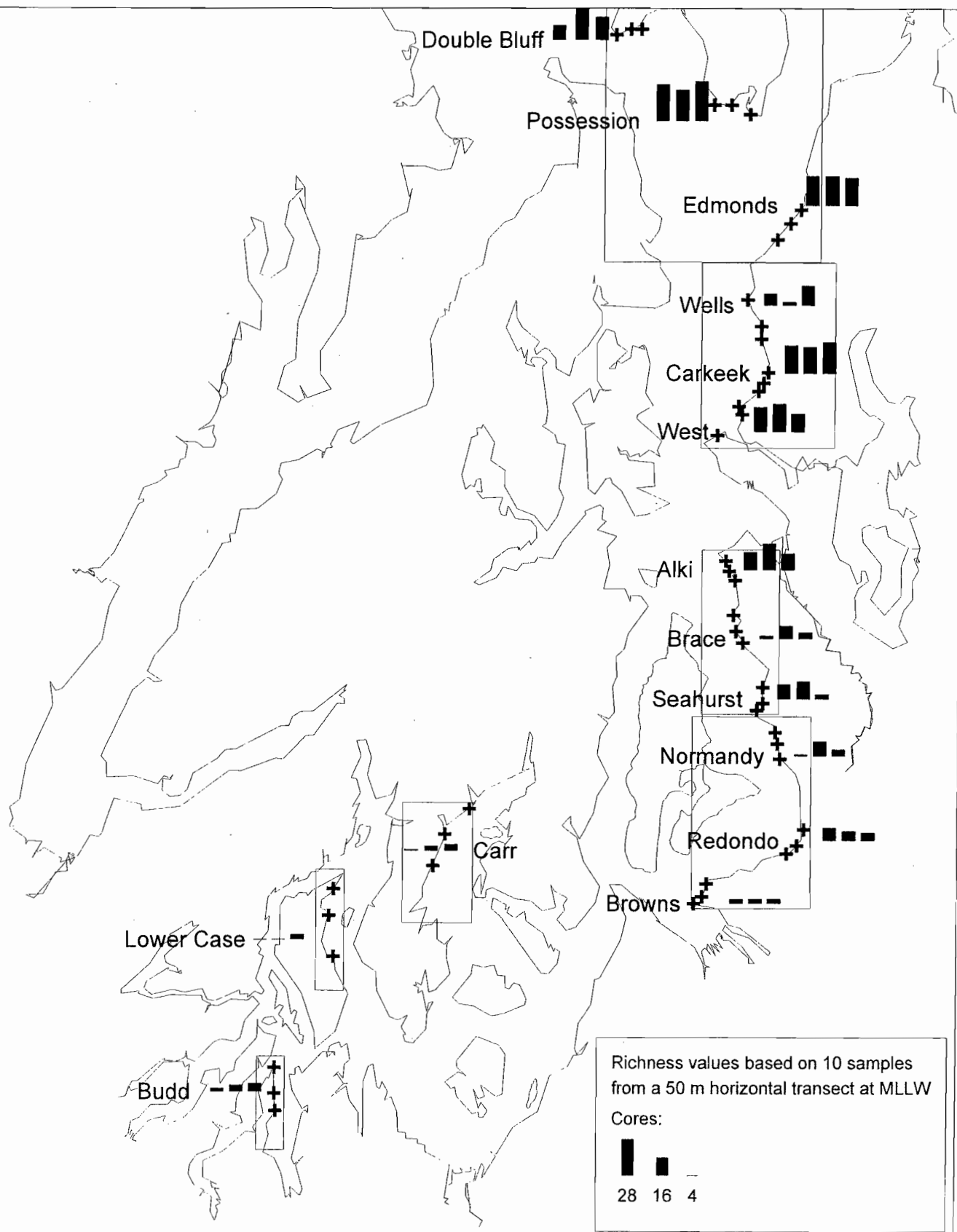


Figure 20. Spatial distribution of plants, herbivores, and carnivores in Puget Sound 1999: Central and South Basin on Low Zone Pebble Beaches

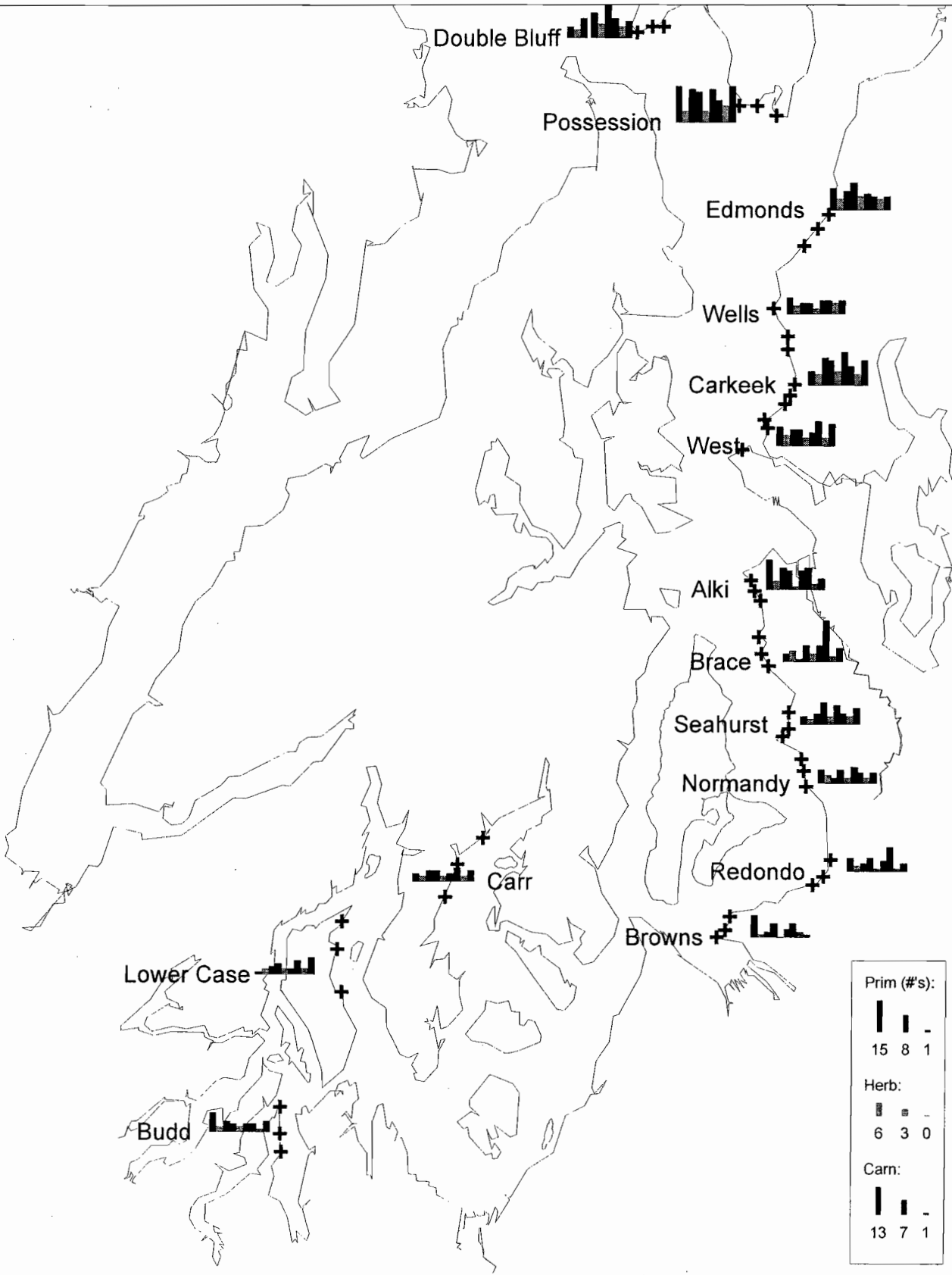


Figure 21. Spatial distribution of deposit, deposit/suspension, and suspension feeders in Puget Sound 1999: Central and South Basin on Low Zone Pebble Beaches

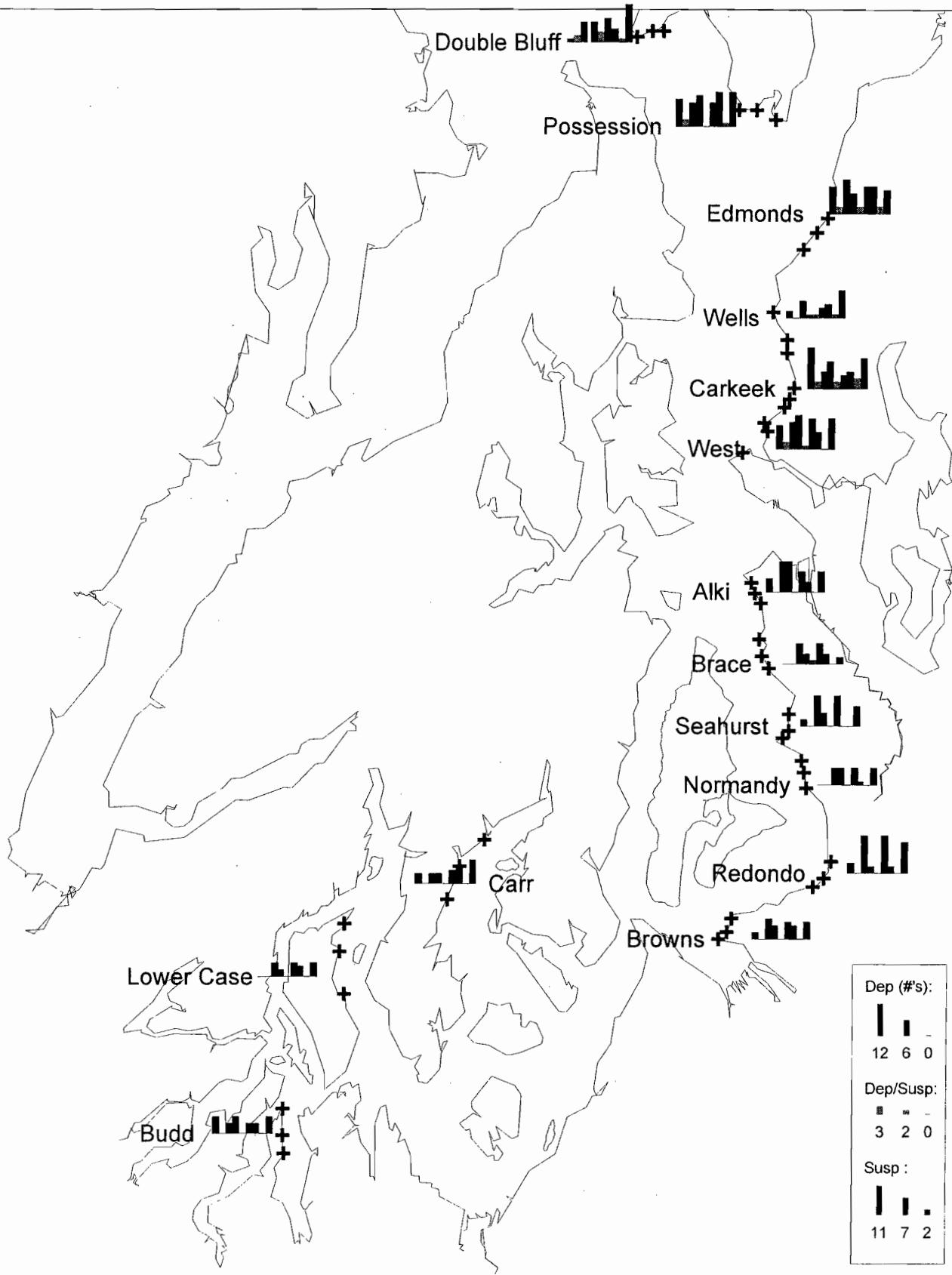


Figure 22. Spatial distribution of scavenger, commensal, and omnivorous feeders in Puget Sound 1999: Central and South Basin on Low Zone Pebble Beaches

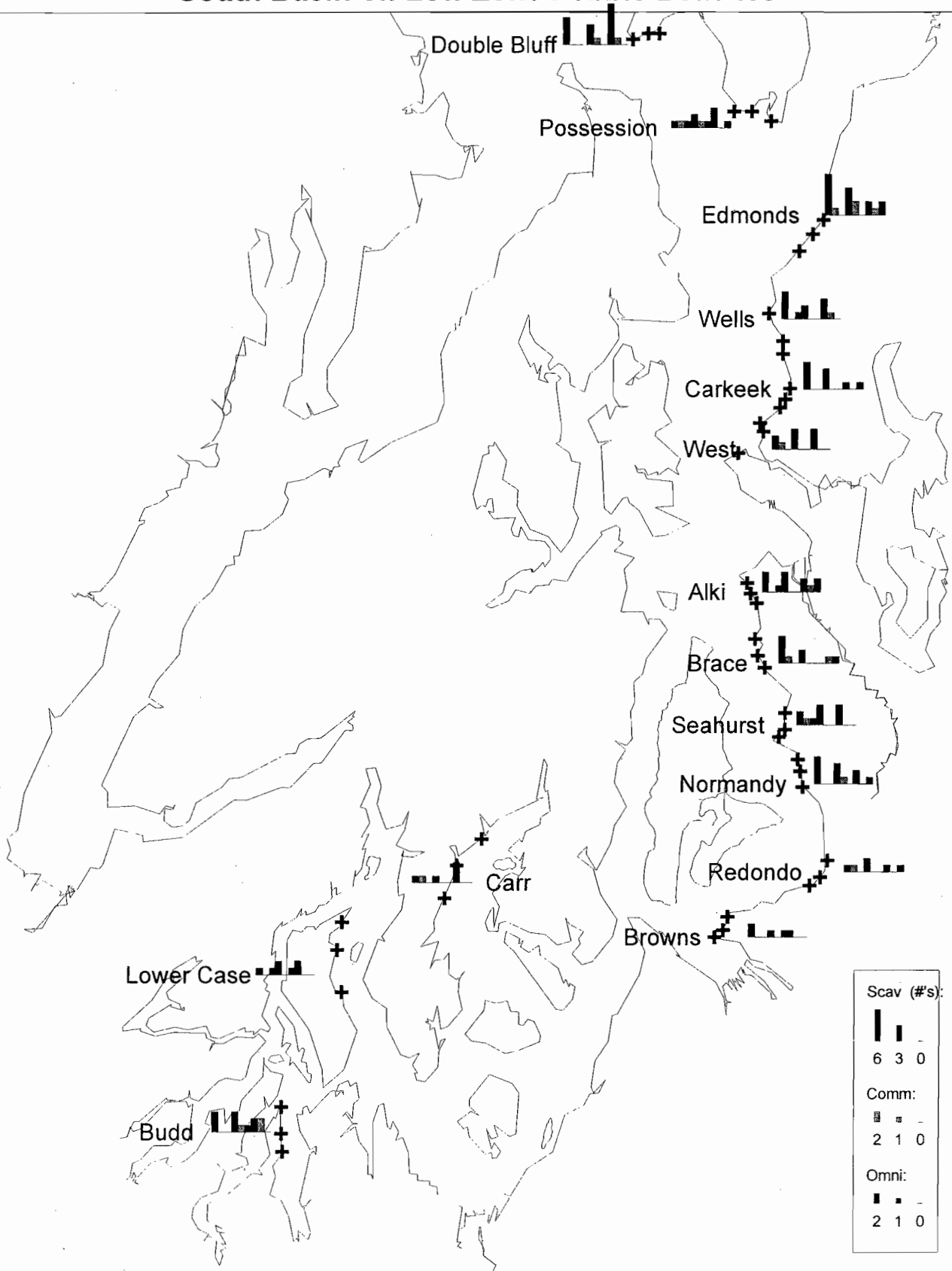
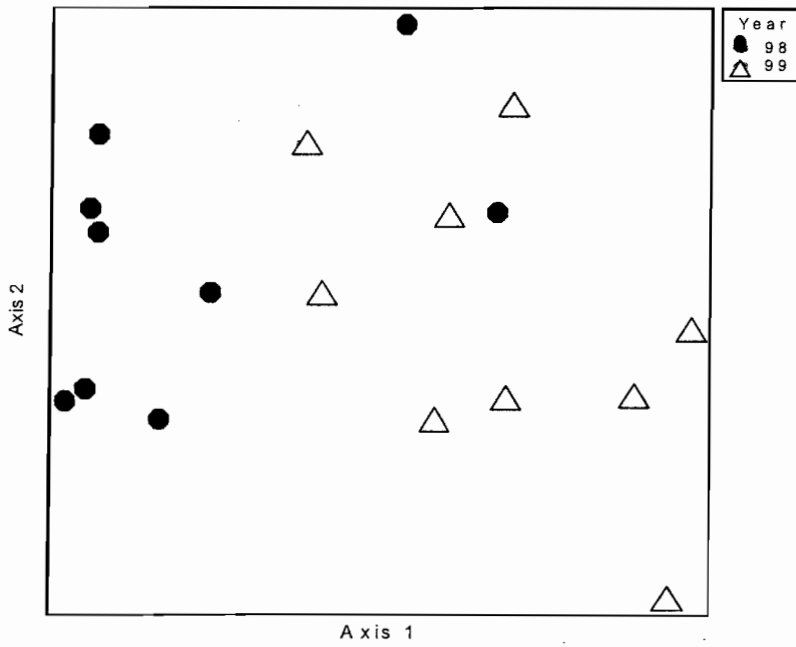


Figure 23. NMS ordinations of 1998 vs.1999 pebble beach samples in the South Basin of Puget Sound.

A.



$p < 0.001$

B. Vector overlays of correlated taxa ($R^2 > .2$)

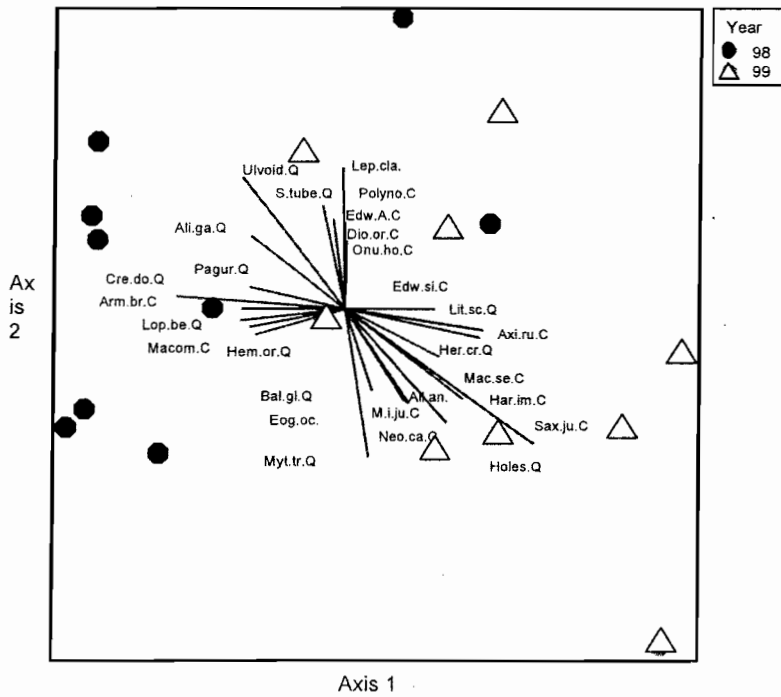
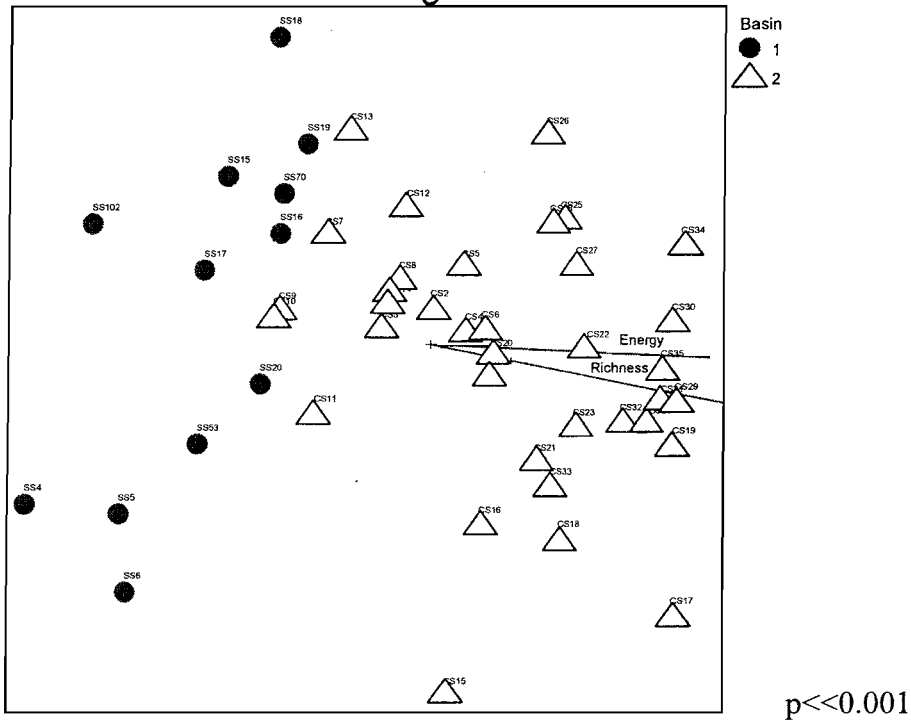


Figure 24. NMS ordinations of 1999 samples among South and Central Basins of Puget Sound.

A. NMS ordination among basins



B. Vector overlay of correlated taxa ($R^2 > .2$)

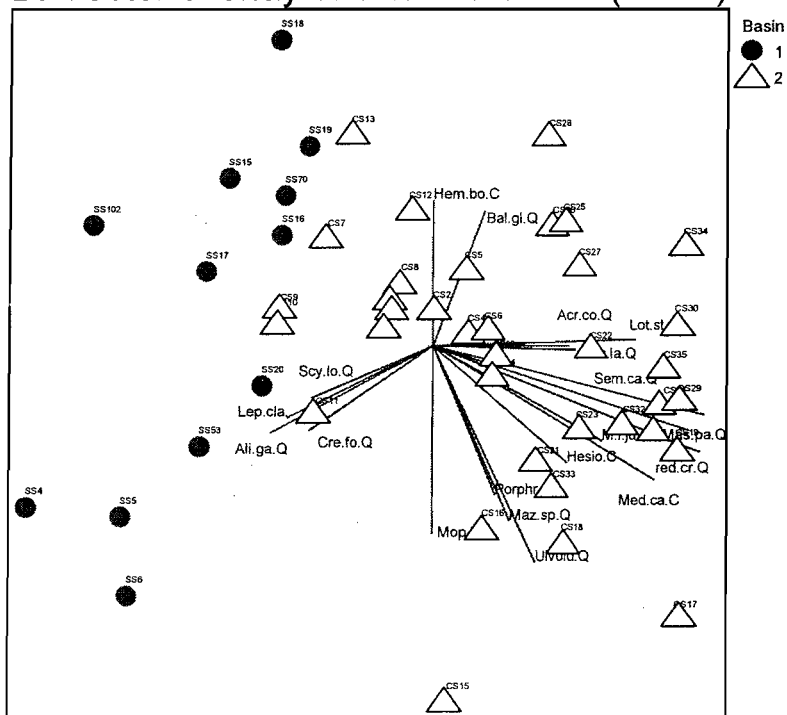
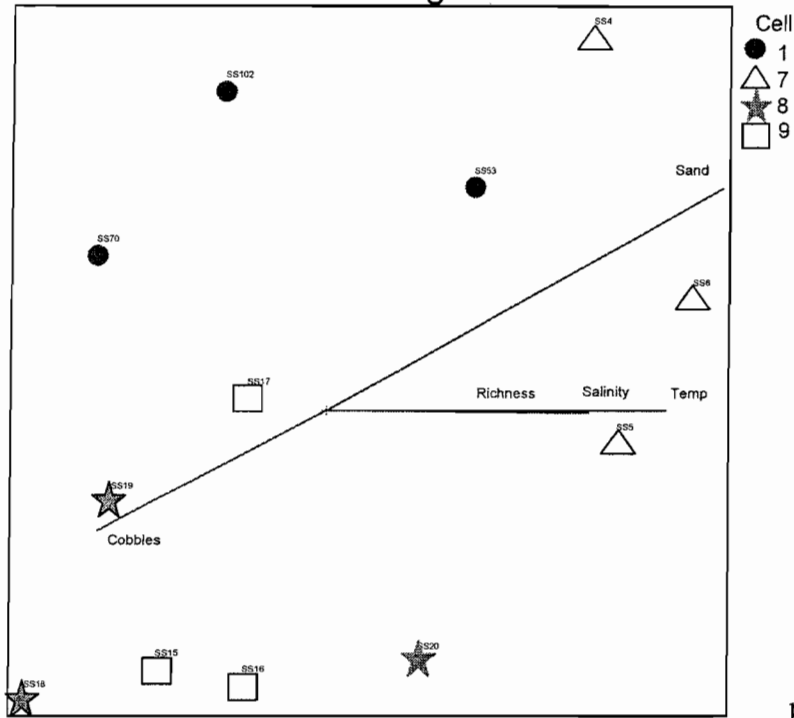


Figure 25. NMS ordinations of 1999 samples among cells in the South Basin of Puget Sound

A. NMS ordination among cells



$p < 0.01$

B. Vector overlay of correlated taxa ($R^2 > .2$)

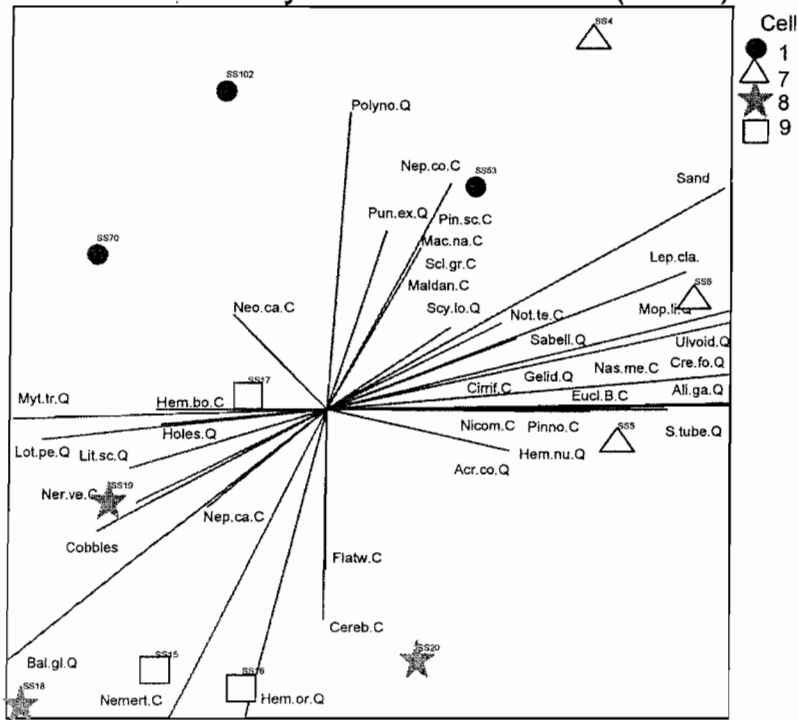
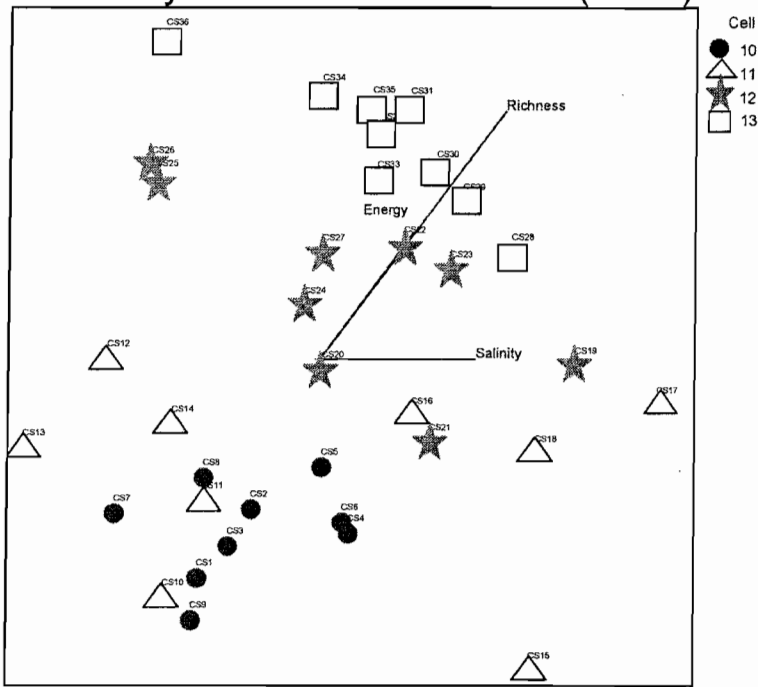
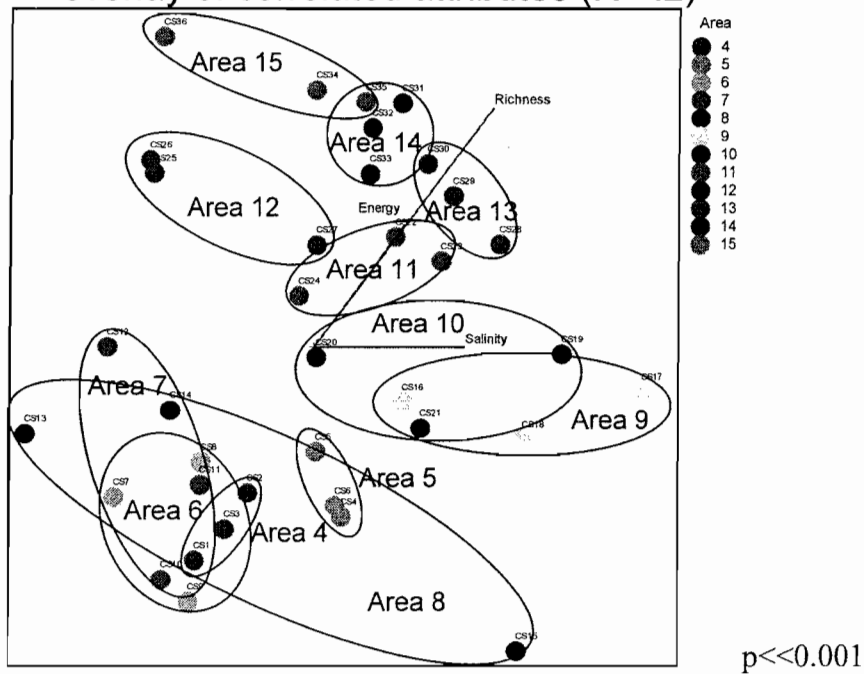


Figure 26. NMS ordinations of 1999 samples among cells in the Central Basin of Puget Sound.

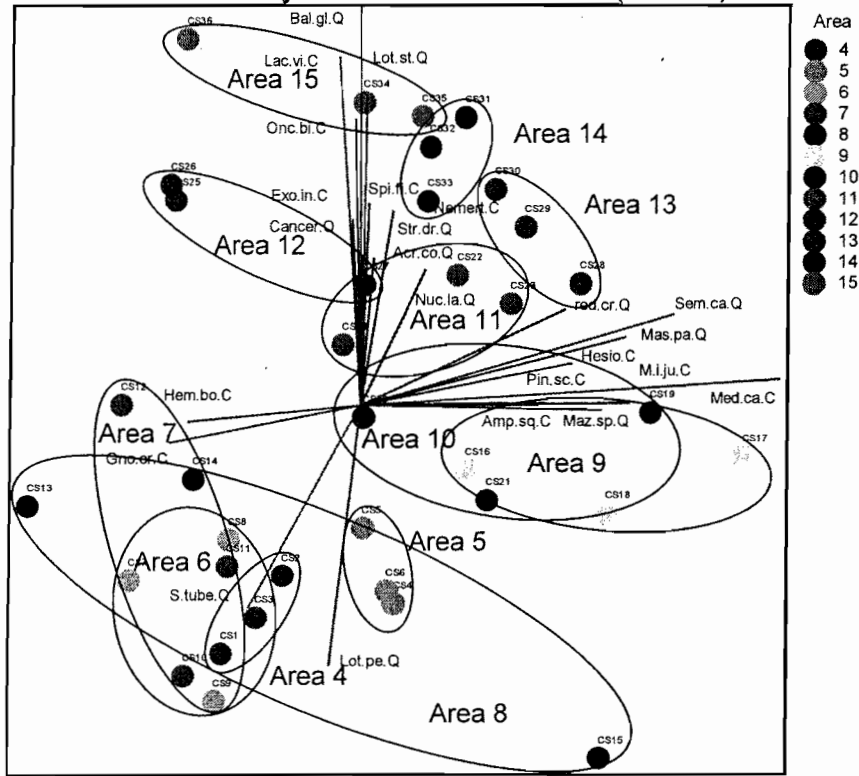
A. NMS ordination among cells with vector overlay of correlated attributes ($R^2 > .2$)



B. NMS ordination among areas with vector overlay of correlated attributes ($R^2 > .2$)



C. Vector overlay of correlated taxa ($R^2 > .2$)



Richness	adj $R^2 = 0.700$ (interaction terms cell x energy x salinity)
Quadrats	adj $R^2 = 0.441$
Cores	adj $R^2 = 0.703$

Table 1. Species found in all Puget Sound samples, 1997-1999.

New Code	PHYLUM	CLASS	FAMILY	SPECIES	TROPHIC	Notes/ old names
Acr.co.Q	Chlorophyta	Ulvophyceae	Acrosiphoniaceae	Acrosiphonia coalita	Prim	
Alaria.Q	Phaeophyta	Phaeophyceae	Alariaceae	Alaria sp. (unident)	Prim	
Ali.ga.Q	Mollusca	Gastropoda	Columbellidae	Alia gausapata	Carn	Some Alia = A. permodesta (eg. CS15,
All.an.	Arthropoda	Malacostraca	Hyalidae	Allorchestes angusta	Scav	SS4); cannot distinguish in field
Ame.sa.C	Arthropoda	Malacostraca	Corophiidae	Americorophium salmonis	Scav	
Amp.ag.C	Arthropoda	Malacostraca	Ampeliscidae	Ampelisca agassizi	Scav	
Amp.la.C	Annelida	Polychaeta	Ampharetidae	Ampharete labrops	Dep	
Amp.pe.C	Echinodermata	Ophiuroidea	Amphiuridae	Amphiodia periercta	Scav	
Amp.ur.C	Echinodermata	Ophiuroidea	Amphiuridae	Amphiodia urtica	Scav	
Amp.sq.C	Echinodermata	Ophiuroidea	Amphiuridae	Amphipholis squamata	Scav	
Amp.da.	Arthropoda	Malacostraca	Ampithoidae	Ampithoe dalli	Scav	
Am.lac.	Arthropoda	Malacostraca	Ampithoidae	Ampithoe lacertosa	Scav	
Ani.pu.	Arthropoda	Malacostraca	Anisogammaridae	Anisogammarus pugettensis	Scav	
Ant.el.Q	Cnidaria	Anthozoa	Actiniidae	Anthopleura elegantissima	Carn	
Aph.mu.C	Annelida	Polychaeta	Cirratulidae	Aphelocheata multifilis	Dep	
Arm.br.C	Annelida	Polychaeta	Opheliidae	Armandia brevis	Dep	
Axi.ru.C	Annelida	Polychaeta	Maldanidae	Axiothella rubrocincta	Dep	
Bal.gl.Q	Arthropoda	Cirripedia	Balanidae	Balanus glandula	Susp	
Bit.es.C	Mollusca	Gastropoda	Cerithiidae	Bittium eschrichtii	Herb	
Boc.ha.C	Annelida	Polychaeta	Spionidae	Boccardiella hamata	Dep/Susp	was Polydora hamata
Callio.Q	Mollusca	Gastropoda	Trochidae	Calliostoma sp.	Herb	
Cancer.Q	Arthropoda	Malacostraca	Cancridea	Cancer sp.	Carn	
Cap.ca.C	Annelida	Polychaeta	Capitellidae	Capitella capitata	Dep	
Capit.C	Annelida	Polychaeta	Capitellidae	Capitellid (unident.)	Dep	
Caula.Q	Rhodophyta	Rhodophyceae	Caulacanthaceae	Caulacanthus sp.	Prim	
Cau.pa.C	Annelida	Polychaeta	Cirratulidae	Cauleriella ?pacifica	Dep	
Ceram.Q	Rhodophyta	Rhodophyceae	Ceramiaceae	Ceramium sp.	Prim	
Cereb.C	Nemertea	Anopla	Lineidae	Cerebratulus sp.	Carn	
Cir.ci.C	Annelida	Polychaeta	Cirratulidae	Cirratulus cingulatus	Dep	
Cir.mu.C	Annelida	Polychaeta	Cirratulidae	Cirratulus multioculata(?)	Dep	
Cir.ro.C	Annelida	Polychaeta	Cirratulidae	Cirratulus robustus	Dep	
Cirrif.C	Annelida	Polychaeta	Cirratulidae	Cirriformia sp.A	Dep	

Table 1 continued

siphon.C	Mollusca	Bivalvia		clam siphons (unidentified)	Susp	
Cli.ju.C	Mollusca	Bivalvia	Cardiidae	<i>Clinocardium nuttallii</i>	Susp	
Cli.nu.C	Mollusca	Bivalvia	Cardiidae	<i>Clinocardium nuttallii</i> juveniles	Susp	
Com.su.C	Mollusca	Bivalvia	Veneridae	<i>Compsomyx subdiaphana</i>	Susp	
Cra.gi.Q	Mollusca	Bivalvia	Ostreoida	<i>Crassostrea gigas</i>	Susp	
Cre.do.Q	Mollusca	Gastropoda	Calyptraeidae	<i>Crepidula dorsata</i>	Susp	
Cre.fo.Q	Mollusca	Gastropoda	Calyptraeidae	<i>Crepidula fornicata</i>	Susp	
Cry.ca.C	Mollusca	Bivalvia	Myidae	<i>Cryptomya californica</i>	Comm	
Dec.gr.C	Annelida	Polychaeta	Capitellidae	<i>Decamastus gracilis</i>	Dep	
Den.ex.Q	Echinodermata	Echinoidea	Dendrasteridae	<i>Dendraster excentricus</i>	Susp	
Des.vi.Q	Phaeophyta	Phaeophyceae	Desmarestiaceae	<i>Desmarestia viridis</i>	Prim	
Dio.or.C	Annelida	Polychaeta	Onuphidae	<i>Diopatra ornata</i>	Carn	
Dor.an.C	Annelida	Polychaeta	Dorvilleidae	<i>Dorvillea annulata</i>	Carn	Schistomeringos annulata
Edw.si.C	Cnidaria	Anthozoa	Edwardsiidae	<i>Edwardsia sipunculoides</i>	Susp	
Edw.A.C	Cnidaria	Anthozoa	Edwardsiidae	<i>Edwardsia</i> sp.	Susp	
End.mu.Q	Rhodophyta	Rhodophyceae	Endocleriaceae	<i>Endocleria muricata</i>	Prim	
Eog.oc.	Arthropoda	Malacostraca	Anisogammaridae	<i>Eogammarus oclairi</i>	Scav	
Ete.pa.C	Annelida	Polychaeta	Phyllodocidae	<i>Eteone pacifica</i>	Carn	
Eucl.A.C	Annelida	Polychaeta	Maldanidae	<i>Euclymene</i> sp.A	Dep	
Eucl.B.C	Annelida	Polychaeta	Maldanidae	<i>Euclymene</i> sp.B (cf. zonalis)	Dep	
Eul.pa.C	Annelida	Polychaeta	Phyllodocidae	<i>Eulalia parvoseta</i>	Carn	
Eupo.A.C	Annelida	Polychaeta	Terebellidae	<i>Eupolymnia</i> sp. A	Dep	
Eva.tr.Q	Echinodermata	Asteroidea	Asteriidae	<i>Evasterias troschellii</i>	Carn	
Exo.in.C	Arthropoda	Malacostraca	Flabellifera	<i>Exosphaeroma inomata</i>	Scav	E. media
Fab.su.C	Arthropoda	Malacostraca	Pinnotheridae	<i>Fabia subquadrata</i>	Comm	
Flatw.C	Platyhelminthes			Flatworm (unident.)	Carn	
Fre.li.C	Platyhelminthes	Platyhelminthes	Childiidae	<i>Fremania litoricola</i>	Carn	
Fuc.ga.Q	Phaeophyta	Phaeophyceae	Fucaceae	<i>Fucus gardneri</i>	Prim	
Gelid.Q	Rhodophyta	Rhodophyceae		<i>Gelidium</i> spp.	Prim	
Gly.am.C	Annelida	Polychaeta	Glyceridae	<i>Glycera americana</i>	Carn	
Gly.si.C	Annelida	Polychaeta	Glyceridae	<i>Glycera siphonostoma</i>	Carn	
Gly.te.C	Annelida	Polychaeta	Glyceridae	<i>Glycera tenuis</i>	Carn	
Gly.pi.C	Annelida	Polychaeta	Goniadidae	<i>Glycinde picta</i>	Carn	

Table 1 continued

Gly.po.C	Annelida	Polychaeta	Glyceridae	Glycinde polygnatha	Carn	
Gno.or.C	Arthropoda	Malacostraca	Sphaeromatidae	Gnorimosphaeroma oregonense	Scav	
Gon.an.C	Annelida	Polychaeta	Goniadidae	Goniada annulata	Carn	
Gra.pa.Q	Rhodophyta	Rhodophyceae	Gracilariaceae	Gracilaria pacifica	Prim	
Gunnel.Q	Chordata	Osteichthyes		Gunnel (unident.)	Carn	
Ham.ve.Q	Mollusca	Gastropoda	Atyidae	Haminoea vesicula	Herb	
Har.im.C	Annelida	Polychaeta	Polynoidae	Harmothoe imbricata	Carn	
Hem.nu.Q	Arthropoda	Malacostraca	Grapsidae	Hemigrapsus nudus	Scav	
Hem.or.Q	Arthropoda	Malacostraca	Grapsidae	Hemigrapsus oregonensis	Scav	
Hem.bo.C	Annelida	Polychaeta	Glyceridae	Hemipodus borealis	Carn	
Her.cr.Q	Mollusca	Gastropoda	Facelinidae	Hermisenda crassicornis	Carn	
Hesio.C	Annelida	Polychaeta	Hesionidae	Hesionid sp. (unident.)	Omni	
Hes.co.C	Annelida	Polychaeta	Polynoidae	Hesperonoe complanata	Carn	
Hia.ar.C	Mollusca	Bivalvia	Hiatellidae	Hiatella arctica	Susp	
Hip.cl.C	Arthropoda	Malacostraca	Hippolytidae	Hippolyte clarki	Scav	
Holes.Q		Miscellaneous		holes in sediment (unident.)	Misc	
Hya.fr.	Arthropoda	Malacostraca	Hyalidae	Hyale frequens	Scav	
Idotea.Q	Arthropoda	Malacostraca	Idoteidae	Idotea sp.	Herb	
Kefer.C	Annelida	Polychaeta	Hesionidae	Kefersteinia sp.	Omni	
Lac.vi.C	Mollusca	Gastropoda	Lacunidae	Lacuna vincta	Herb	
Lam.sa.Q	Phaeophyta	Phaeophyceae	Laminariaceae	Laminaria saccharina	Prim	
Lei.pu.C	Annelida	Polychaeta	Orbiniidae	Leitoscoloplos pugettensis	Dep	Scoloplos pugettensis
Lep.sq.C	Annelida	Polychaeta	Polynoidae	Lepidonotus squamatus	Carn	
Lep.he.Q	Echinodermata	Asteroidea	Asteriidae	Leptasterias hexactis	Carn	
Tanaid.C	Arthropoda	Malacostraca	Tanaiacea	Leptochelia dubia	Scav	
Lep.cl.a.C	Echinodermata	Holothuroidea	Synaptidae	Leptosynapta clarki	Dep	
Lig.oc.Q	Arthropoda	Malacostraca	Ligiidae	Ligia occidentalis	Scav	
Lir.su.Q	Mollusca	Gastropoda	Trochidae	Lirularia succincta	Herb	
Lit.sc.Q	Mollusca	Gastropoda	Littorinidae	Littorina scutulata	Herb	
Lop.be.Q	Arthropoda	Malacostraca	Xanthidae	Lophopanopeus bellus bellus	Carn	
Lot.pe.Q	Mollusca	Gastropoda	Lottiidae	Lottia pelta	Herb	
Lot.st.Q	Mollusca	Gastropoda	Lottiidae	Lottia strigatella	Herb	
Luc.te.C	Mollusca	Bivalvia	Lucinidae	Lucina tenuisculpta	Susp	

Table 1 continued

Lum.pa.C	Annelida	Polychaeta	Lumbrineridae	Lumbrineris pallida	Omni	
Lum.zo.C	Annelida	Polychaeta	Lumbrineridae	Lumbrineris zonata	Omni	
Mac.ba.C	Mollusca	Bivalvia	Tellinidae	Macoma balthica	Dep	M. inconspicua
Mac.in.C	Mollusca	Bivalvia	Tellinidae	Macoma inquinata	Dep	
M.i.ju.C	Mollusca	Bivalvia	Tellinidae	Macoma inquinata juveniles	Dep	
Mac.na.C	Mollusca	Bivalvia	Tellinidae	Macoma nasuta	Dep	
Mac.se.C	Mollusca	Bivalvia	Tellinidae	Macoma secta	Dep	
Macom.C	Mollusca	Bivalvia	Tellinidae	Macoma sp. (unident.)	Dep	
Mag.ho.C	Annelida	Polychaeta	Magelonidae	Magelona hobsonae	Dep	
Mal.gl.C	Annelida	Polychaeta	Spionidae	Malacoceros glutaeus	Dep/Susp	Rhynchospio glutaeus
Mal.sa.C	Annelida	Polychaeta	Maldanidae	Maldane sarsi	Dep	
Maldan.C	Annelida	Polychaeta	Maldanidae	Maldanid (unident.)	Dep	
Mal.ba.C	Annelida	Polychaeta	Polynoidae	Malmgreniella bansei	Comm	
Mal.ni.C	Annelida	Polychaeta	Polynoidae	Malmgreniella nigralba	Comm	
Mas.pa.Q	Rhodophyta	Rhodophyceae	Petrocelidaceae	Mastocarpus papillatus	Prim	
Maz.he.Q	Rhodophyta	Rhodophyceae	Gigartinaceae	Mazzaella heterocarpa	Prim	
Maz.sp.Q	Rhodophyta	Rhodophyceae	Gigartinaceae	Mazzaella splendens	Prim	
Med.ca.C	Annelida	Polychaeta	Capitellidae	Mediomastus californiensis	Dep	
Meg.pu.	Arthropoda	Malacostraca	Talitridae	Megalorchestia pugettensis	Scav	
Met.se.Q	Cnidaria	Anthozoa	Metridiidae	Metridium senile	Susp	
Mic.bo.Q	Rhodophyta	Rhodophyceae	Ceramiaceae	Microcladia borealis	Prim	
Mic.du.C	Annelida	Polychaeta	Hesionidae	Micropodarke dubia	Omni	
Mon.ac.C	Arthropoda	Malacostraca	Corophiidae	Monocorophium acherusicum	Scav	
Mop.li.Q	Mollusca	Polyplacophora	Mopaliidae	Mopalia lignosa	Herb	
Mya.ju.C	Mollusca	Bivalvia	Myidae	Mya arenaria juveniles	Susp	
Mys.tu.C	Mollusca	Bivalvia	Montacutidae	Mysella tumida	Susp	
Myt.tr.Q	Mollusca	Bivalvia	Mytilidae	Mytilus trossulus	Susp	M. edulis
Nas.me.C	Mollusca	Gastropoda	Nassariidae	Nassarius mendicus	Scav	
Nas.pe.C	Mollusca	Gastropoda	Nassariidae	Nassarius perpinguis	Scav	
Nemert.C	Nemertea			Nemertean (unident.)	Carn	
Neo.ro.C	Annelida	Polychaeta	Terebellidae	Neoamphitrite robusta	Dep	
Neo.la.Q	Rhodophyta	Rhodophyceae	Rhodomelaceae	Neorhodomela larix	Prim	
Neo.ca.C	Arthropoda	Malacostraca	Callianassidae	Neotrypaea californiensis	Dep	Callianassa californiensis

Table 1 continued

Nep.ca.C	Annelida	Polychaeta	Nephtyidae	Nephtys caeca	Carn
Nep.co.C	Annelida	Polychaeta	Nephtyidae	Nephtys caecoides	Carn
Nep.fe.C	Annelida	Polychaeta	Nephtyidae	Nephtys ferruginea	Carn
Nep.lo.C	Annelida	Polychaeta	Nephtyidae	Nephtys longosetosa	Carn
Nephty.C	Annelida	Polychaeta	Nephtyidae	Nephtys sp. (unident.)	Carn
Nereid.C	Annelida	Polychaeta	Nereidae	Nereid (unident.)	Omni
Ner.br.C	Annelida	Polychaeta	Nereidae	Nereis brandti	Omni
Ner.li.C	Annelida	Polychaeta	Nereidae	Nereis limnicola	Omni
Ner.pr.C	Annelida	Polychaeta	Nereidae	Nereis procera	Omni
Ner.ve.C	Annelida	Polychaeta	Nereidae	Nereis vexillosa	Omni
Ner.zo.C	Annelida	Polychaeta	Nereidae	Nereis zonata	Omni
Nic.zo.C	Annelida	Polychaeta	Terebellidae	Nicolea zostericola (?)	Dep
Nicom.C	Annelida	Polychaeta	Maldanidae	Nicomache ?personata	Dep
Not.co.C	Annelida	Polychaeta	Onuphidae	Nothria conchylega	Omni
Not.li.C	Annelida	Polychaeta	Capitellidae	Notomastus lineatus	Dep
Not.te.C	Annelida	Polychaeta	Capitellidae	Notomastus tenuis	Dep
Nuc.ca.Q	Mollusca	Gastropoda	Nucellidae	Nucella canaliculata	Carn
Nuc.la.Q	Mollusca	Gastropoda	Nucellidae	Nucella lamellosa	Carn
Odo.fl.Q	Rhodophyta	Rhodophyceae	Rhodomelaceae	Odonthalia floccosa	Prim
Odosto.C	Mollusca	Gastropoda	Pyramidellidae	Odostomia sp. (unident.)	Carn
Onc.bi.C	Mollusca	Gastropoda	Onchidorididae	Onchidoris bilamellata	Carn
Onu.ho.C	Annelida	Polychaeta	Onuphidae	Onuphis 'holobranchiata'	Omni
Onu.ir.C	Annelida	Polychaeta	Onuphidae	Onuphis iridescens	Omni
Oph.lu.C	Echinodermata	Ophiuroidea	Ophiuridae	Ophiura lutkeni	Scav
Ost.ed.Q	Mollusca	Bivalvia	Ostreoida	Ostrea edulis	Susp
Ost.lu.Q	Mollusca	Bivalvia	Ostreoida	Ostrea lurida	Susp
Owe.fu.C	Annelida	Polychaeta	Oweniidae	Owenia fusiformis	Dep
Pagur.Q	Arthropoda	Malacostraca	Paguridae	Pagurus spp. (beriganus and others)	Scav
Par.pe.C	Nemertea	Enopla	Emplectonematidae	Paranemertes peregrina	Carn
Par.pi.C	Annelida	Polychaeta	Spionidae	Paraprionospio pinnata	Dep/Susp Prionospio pinnata
Pec.gr.C	Annelida	Polychaeta	Pectinariidae	Pectinaria granulata	Dep
Pec.mo.C	Annelida	Polychaeta	Pectinariidae	Pectinaria moorei	Dep
Pet.fa.Q	Phaeophyta	Scytosiphonaceae	Scytosiphonaceae	Petalonia fascia	Prim

Table 1 continued

Pha.ag.C	Sipuncula		Phascolosomatidae	Phascolosoma agassizii	Dep	
Phe.pl.C	Annelida	Polychaeta	Flabelligeridae	Pherusa plumosa	Dep	
Pho.mi.C	Annelida	Polychaeta	Pholoidae	Pholoe minuta	Dep	
Pho.ha.C	Phoronida		Phoronidae	Phoronopsis harmeri	Susp	
Piddoc.Q	Mollusca	Bivalvia	Pholadidae	Piddock clam (unident.)	Susp	
Pin.eb.C	Arthropoda	Malacostraca	Pinnotheridae	Pinnixia eburna	Comm	
Pin.fa.C	Arthropoda	Malacostraca	Pinnotheridae	Pinnixia faba	Comm	
Pin.sc.C	Arthropoda	Malacostraca	Pinnotheridae	Pinnixia schmitti	Comm	
Pin.tu.C	Arthropoda	Malacostraca	Pinnotheridae	Pinnixia tubicola	Comm	
Pinno.C	Arthropoda	Malacostraca	Pinnotheridae	Pinnotherid sp. (unident.)	Comm	
Pis.wu.C	Annelida	Polychaeta	Terebellidae	Pista wui	Dep	
Pla.bi.C	Annelida	Polychaeta	Nereidae	Platynereis bicanaliculata	Omni	
Pod.pu.C	Annelida	Polychaeta	Hesionidae	Podarke pugettensis	Omni	Ophiodromus pugettensis
Pod.gl.C	Annelida	Polychaeta	Hesionidae	Podarkeopsis glabrus	Omni	P. brevipalpa
Pod.ce.C	Mollusca	Bivalvia	Anomiidae	Pododesmus cepio	Susp	
Pol.le.C	Mollusca	Gastropoda	Naticidae	Polinices lewisii	Carn	
Polyci.C	Annelida	Polychaeta	Terebellidae	Polycirrus n. sp. (L. Harris)	Dep	
Pol.br.C	Annelida	Polychaeta	Spionidae	Polydora brachycephala	Dep/Susp	
Pol.ca.C	Annelida	Polychaeta	Spionidae	Polydora cardalia	Dep/Susp	
Pol.co.C	Annelida	Polychaeta	Spionidae	Polydora columbiana	Dep/Susp	
Pol.ke.C	Annelida	Polychaeta	Spionidae	Polydora kempii japonica	Dep/Susp	
Pol.so.C	Annelida	Polychaeta	Spionidae	Polydora socialis	Dep/Susp	
Polyno.C	Annelida	Polychaeta	Polynoidae	Polynoid (unident., in core)	Carn	
Polyno.Q	Annelida	Polychaeta	Polynoidae	Polynoid (unident., in quadrat)	Carn	
Polysi.Q	Rhodophyta	Rhodophyceae	Rhodomelaceae	Polysiphonia sp. (unident.)	Prim	
Pon.iv.	Arthropoda	Malacostraca	Pontogeneiidae	Pontogeneia ivanovi	Scav	
Porphr.Q	Rhodophyta	Rhodophyceae	Bangiaceae	Porphyra sp.	Prim	
Prioni.Q	Rhodophyta	Rhodophyceae	Halymeniaceae	Prionitis sp. (unident.)	Prim	
Pri.mu.C	Annelida	Polychaeta	Spionidae	Prionospio multibranchiata	Dep/Susp	
Pri.st.C	Annelida	Polychaeta	Spionidae	Prionospio steenstrupi	Dep/Susp	
Pro.st.C	Mollusca	Bivalvia	Veneridae	Protothaca staminea	Susp	
Pro.ju.C	Mollusca	Bivalvia	Veneridae	Protothaca staminea juv.	Susp	
Psu.ru.C	Mollusca	Bivalvia	Montacutidae	Pseudopythina rugifera	Comm	

Table 1 continued

Pug.gr.Q	Arthropoda	Malacostraca	Majidae	<i>Pugettia gracilis</i>	Scav	
Pun.ex.Q	Phaeophyta	Phaeophyceae	Punctariaceae	<i>Punctaria expansa</i>	Prim	
red.cr.Q	Rhodophyta	Rhodophyceae		Red encrusting algae (unid.)	Prim	
Sabell.Q	Annelida	Polychaeta	Sabellidae	Sabellid (unident.)	Susp	
Saccog.C	Hemichordata	Enteropneusta	Unid	<i>Saccoglossus</i> sp.	Dep	
Sarcod.Q	Rhodophyta	Rhodophyceae	Solieriaceae	<i>Sarcodiotheca</i> sp. (unid.)	Prim	
Sargas.Q	Phaeophyta	Phaeophyceae	Sargassaceae	<i>Sargassum muticum</i>	Prim	
Sax.gi.C	Mollusca	Bivalvia	Veneridae	<i>Saxidomus giganteus</i>	Susp	
Sax.ju.C	Mollusca	Bivalvia	Veneridae	<i>Saxidomus giganteus</i> juv.	Susp	
Scl.gr.C	Arthropoda	Malacostraca	Pinnotheridae	<i>Scleroplax granulata</i>	Comm	
Sco.sq.C	Annelida	Polychaeta	Spionidae	<i>Scolecopsis squamata</i>	Dep/Susp	
Sco.ar.C	Annelida	Polychaeta	Orbiniidae	<i>Scoloplos armiger</i>	Dep	
Scy.lo.Q	Phaeophyta	Phaeophyceae	Scytosiphonaceae	<i>Scytosiphon lomentaria</i>	Prim	
Sem.ca.Q	Arthropoda	Cirripedia	Archaeobalanidae	<i>Semibalanus cariosus</i>	Susp	
Serpul.Q	Annelida	Polychaeta	Serpulidae	<i>Serpulid</i> sp. (unident.)	Susp	
Sig.te.C	Annelida	Polychaeta	Pilargiidae	<i>Sigambra tentaculata</i>	Carn	
Smi.na.Q	Rhodophyta	Rhodophyceae	Erythropeltidaceae	<i>Smithora naiadum</i>	Prim	
Spi.fi.C	Annelida	Polychaeta	Spionidae	<i>Spio filicornis</i>	Dep/Susp	
Spi.co.C	Annelida	Polychaeta	Chaetopteridae	<i>Spiochaetopterus costarum</i>	Susp	
S.tube.Q	Annelida	Polychaeta	Chaetopteridae	<i>Spiochaetopterus costarum</i> tubes	Susp	
Spi.be.C	Annelida	Polychaeta	Spionidae	<i>Spiophanes berkeleyorum</i>	Dep/Susp	
Spi.bo.C	Annelida	Polychaeta	Spionidae	<i>Spiophanes bombyx</i>	Dep/Susp	
Str.dr.Q	Echinodermata	Echinoidea	Strongylocentrotidae	<i>Strongylocentrotus droebachiensis</i>	Herb	
Syl.st.C	Annelida	Polychaeta	Syllidae	<i>Syllis ?stewarti</i>	Carn	
Syl.he.C	Annelida	Polychaeta	Syllidae	<i>Syllis heterochaeta</i>	Carn	
Tap.ph.C	Mollusca	Bivalvia	Veneridae	<i>Tapes philippinarum</i>	Susp	<i>Tapes japonica</i>
Tec.sc.Q	Mollusca	Gastropoda	Lottiidae	<i>Tectura scutum</i>	Herb	
Tel.bo.C	Mollusca	Bivalvia	Tellinidae	<i>Tellina bodegensis</i>	Dep	
Tel.mo.C	Mollusca	Bivalvia	Tellinidae	<i>Tellina modesta</i>	Dep	
Tel.nu.C	Mollusca	Bivalvia	Tellinidae	<i>Tellina nukuloides</i>	Dep	
Tellin.C	Mollusca	Bivalvia	Tellinidae	<i>Tellina</i> sp. (unident.)	Dep	
Tereb.C	Annelida	Polychaeta	Terebellidae	<i>Terebellid</i> sp. (unident.)	Dep	
Ter.ca.C	Annelida	Polychaeta	Trichobranchidae	<i>Terebellides californica</i>	Dep	

Table 1 continued

Ter.st.C	Annelida	Polychaeta	Trichobranchidae	Terebellides stroemii	Dep
Tha.pa.C	Annelida	Polychaeta	Cirratulidae	Tharyx parvus	Dep
Ton.li.Q	Mollusca	Polyplacophora	Lepidochitonidae	Tonicella lineata	Herb
Tra.ta.C	Mollusca	Bivalvia	Veneridae	Transennella tantilla	Susp
Tre.ca.Q	Mollusca	Bivalvia	Mactridae	Tresus capax	Susp
Tre.ju.C	Mollusca	Bivalvia	Mactridae	Tresus capax juveniles	Susp
Turbon.C	Mollusca	Gastropoda	Pyramidellidae	Turbonilla sp. (unident.)	Herb
Ulvoid.Q	Chlorophyta	Chlorophyceae		Ulvoids (unident.)	Prim
Upo.pu.C	Arthropoda	Malacostraca	Upogebiidae	Upogebia pugettensis	Dep
Zos.ma.Q	Anthophyta		Potamogetonaceae	Zostera marina	Prim

Table 2. T-test p-values for comparisons of taxa between years 1998 and 1999 from South Puget Sound sample sites. Highlighted taxa are shown on maps in Appendix A.

Taxon	p-value
Acrosiphonia coalita	0.000
Alia gausapata	0.801
Allorchestes angusta	0.003
Ampharete labrops	0.319
Aphelochaeta multifilis	0.638
Armandia brevis	0.001
Axiothella rubrocincta	0.082
Balanus glandula	0.099
Bittium eschrichtii	0.157
Caulacanthus sp.	0.004
Ceramium sp.	0.319
Cerebratulus sp.	0.000
Cirratulus robustus	0.319
Cirriformia sp.A	0.100
clam siphons (unidentified)	0.319
Clinocardium nuttallii	0.082
Crassostrea gigas	0.023
Crepidula dorsata	0.004
Crepidula fornicata	0.247
Cryptomya californica	1.000
Decamastus gracilis	0.319
Dendraster excentricus	0.351
Diopatra ornata	0.319
Edwardsia sipunculoides	0.001
Eogammarus oclairi	0.008
Euclymene sp.A	0.019
Euclymene sp.B	0.057
Eupolymnia sp. A	0.655
Flatworms	0.005
Gelidium spp.	0.014
Glycinde picta	0.082
Gnorimosphaeroma oregonense	0.107
Gracilaria pacifica	0.775
Harmothoe imbricata	0.101
Hemigrapsus nudus	0.157
Hemigrapsus oregonensis	0.000

Table 2. Continued

Hemipodus borealis	0.610
Hermisenda crassicornis	0.082
Hiatella arctica	0.319
holes in sediment (unident.)	0.000
Lacuna vincta	0.319
Leitoscoloplos pugettensis	0.189
Leptosynapta clarki	0.001
Littorina scutulata	0.000
Lophopanopeus bellus bellus	0.002
Lottia pelta	0.461
Lumbrineris zonata	0.319
Macoma inquinata	0.319
Macoma inquinata juveniles	0.101
Macoma nasuta	0.319
Macoma secta	0.319
Macoma sp. (unident.)	0.000
Magelona hobsonae	0.319
Malmgreniella bansei	0.082
Malmgreniella nigralba	0.319
Mastocarpus papillatus	0.852
Mediomastus californiensis	0.002
Micropodarke dubia	0.319
Monocorophium acherusicum	1.000
Mopalia lignosa	0.812
Mytilus trossulus	0.436
Nassarius mendicus	1.000
Nemertean (unident.)	0.008
Neotrypaea californiensis	0.044
Nephtys caecoides	0.176
Nephtys ferruginea	0.563
Nereis procera	0.542
Nicomache personata	0.319
Notomastus lineatus	0.384
Notomastus tenuis	0.951
Nucella lamellosa	0.802
Onchidoris bilamellata	0.001
Onuphis 'holobranchiata'	0.157
Pagurus (all)	0.113
Pinnixia schmitti	0.240
Pinnotherid sp. (unident.)	0.705

Table 2. Continued

Platynereis bicanaliculata	0.073
Podarke pugettensis	0.007
Polycirrus n. sp. (L. Harris)	0.043
Polynoid (unident., in core)	0.157
Polysiphonia sp. (unident.)	0.005
Porphyra sp.	0.011
Protothaca staminea	0.005
Protothaca staminea juv.	0.319
Punctaria expansa	0.000
Red encrusting algae (unid.)	0.947
Sabellid (unident.)	0.200
Saxidomus giganteus	0.157
Saxidomus giganteus juv.	0.157
Scleroplax granulata	1.000
Scoloplos armiger	0.319
Scytosiphon lomentaria	0.000
Spiochaetopterus costarum in core	0.082
Spiophanes berkeleyorum	0.319
Tapes philippinarum	0.319
Terebellid sp. (unident.)	1.000
Turbonilla sp. (unident.)	0.157
Ulvoids	0.001
Total significant p-values	29
Total non significant p-values	68
% similar taxa	70

Table 3. Nested ANOVA p-values for individual taxa among Central Puget Sound segments, among areas within cells, among cells within basins, and among South Sound and Central Sound Basins. Highlighted taxa are shown on the accompanying figures.

Taxon	Segment	Area	Cell	Basin
Acrosiphonia coalita	0.45	0.35	0.00	0.00
Alaria sp. (unident)	0.05	0.84	0.42	0.00
Alia gausapata	0.06	0.10	0.00	1.00
Amphiodia periercta	0.23	0.52	0.11	0.00
Amphipholis squamata	0.61	0.44	0.01	0.00
Amphiodia urtica	0.42	0.46	0.57	0.00
Anthopleura elegantissima	0.14	0.34	0.00	0.00
Aphelochaeta multifilis	0.53	0.46	0.01	1.00
Armandia brevis	0.42	0.00	0.00	0.00
Axiiothella rubrocincta	0.38	0.21	0.15	0.73
Balanus glandula	0.02	0.01	0.66	0.00
Boccardiella hamata	0.42	0.42	0.57	0.00
Calliostoma sp.	0.53	0.46	0.42	0.00
Cancer sp.	0.23	0.15	0.05	0.00
Capitella capitata	0.01	0.96	0.05	0.00
Caulleriella ?pacifica	0.46	0.00	0.07	0.00
Caulacanthus sp.	0.00	0.00	0.00	0.00
Ceramium sp.	0.53	0.46	0.57	1.00
Cerebratulus sp.	0.39	0.74	0.00	0.94
Cirratulus cingulatus	0.42	0.42	0.25	0.00
Cirratulus multioculata(?)	0.51	0.42	0.20	0.00
Cirratulus robustus	0.42	0.00	0.01	0.00
Cirriiformia sp.A	0.53	0.46	0.00	1.00
Clinocardium nuttallii	0.59	0.51	0.24	0.00
Clinocardium nuttallii juveniles	0.36	0.36	0.01	0.00
Crassostrea gigas	0.61	0.09	0.00	0.97
Crepidula dorsata	0.36	0.72	0.78	0.94
Crepidula fornicata	0.49	0.00	0.00	1.00
Cryptomya californica	0.67	0.46	0.33	0.98
Dendraster excentricus	0.56	0.46	0.43	1.00
Desmarestia viridis	0.05	0.84	0.42	0.00
Dorvillea annulata	0.42	0.42	0.57	0.00
Edwardsia sipunculoides	0.53	0.46	0.00	1.00
Eteone pacifica	0.62	0.46	0.42	0.73
Euclymene sp.A	0.07	0.47	0.03	0.00
Euclymene sp.B (cf. zonalis)	0.53	0.46	0.00	1.00
Eulalia parvoseta	0.42	0.42	0.57	0.00

Table 3. Continued

Eupolymnia sp. A	0.53	0.46	0.08	1.00
Exosphaeroma inornata	0.27	0.00	0.00	0.00
Fabia subquadrata	0.24	0.59	0.01	0.00
Flatworm (unident.)	0.40	0.18	0.00	0.00
Fucus gardneri	0.50	0.46	0.12	0.00
Gelidium spp.	0.09	0.53	0.18	0.00
Glycera americana	0.82	0.44	0.06	0.79
Glycinde picta	0.44	0.06	0.00	0.00
Gnorimosphaeroma oregonense	0.04	0.01	0.00	0.66
Gracilaria pacifica	0.52	0.20	0.02	0.99
Gunnel (unident.)	0.10	0.37	0.01	0.00
Harmothoe imbricata	0.24	0.60	0.83	0.38
Hemipodus borealis	0.22	0.20	0.31	0.00
Hemigrapsus nudus	0.00	0.00	0.01	0.00
Hemigrapsus oregonensis	0.02	0.33	0.00	0.00
Hermisenda crassicornis	0.70	0.10	0.00	0.00
Hesionid sp. (unident.)	0.40	0.00	0.00	0.00
holes in sediment (unident.)	0.20	0.01	0.78	0.00
Idotea sp.	0.11	0.51	0.00	0.00
Kefersteinia sp.	0.44	0.46	0.57	0.47
Lacuna vincta	0.04	0.00	0.00	0.00
Laminaria saccharina	0.45	0.06	0.01	0.00
Leitoscoloplos pugettensis	0.51	0.49	0.09	0.01
Leptosynapta clarki	0.82	0.30	0.00	0.04
Leptasterias hexactis	0.49	0.46	0.13	0.00
Lepidonotus squamatus	0.55	0.39	0.16	0.15
Littorina scutulata	0.45	0.04	0.00	0.00
Lophopanopeus bellus bellus	0.46	0.02	0.95	0.00
Lottia pelta	0.08	0.00	0.24	0.00
Lottia strigatella	0.04	0.00	0.00	0.00
Lucina tenuisculpta	0.30	0.07	0.01	0.00
Lumbrineris zonata	0.45	0.00	0.00	0.00
Macoma inquinata juveniles	0.02	0.41	0.00	0.00
Macoma balthica	0.44	0.46	0.57	0.47
Macoma inquinata	0.02	0.41	0.00	0.00
Macoma nasuta	0.00	0.99	0.78	0.03
Macoma secta	0.44	0.02	0.99	0.37
Magelona hobsonae	0.00	0.00	0.08	0.00
Malacoceros glutaeus	0.08	0.80	0.20	0.00
Malmgreniella nigralba	0.00	0.00	0.08	0.00
Maldane sarsi	0.05	0.84	0.73	0.47

Table 3. Continued

Mastocarpus papillatus	0.44	0.02	0.00	0.00
Mazzaella heterocarpa	0.03	0.44	0.00	0.00
Mazzaella splendens	0.34	0.36	0.00	0.00
Mediomastus californiensis	0.08	0.01	0.00	0.00
Metridium senile	0.56	0.40	0.08	0.01
Microcladia borealis	0.00	0.00	0.42	0.00
Micropodarke dubia	0.10	0.21	0.32	0.88
Mopalia lignosa	0.40	0.62	0.00	0.00
Mya arenaria juveniles	0.55	0.46	0.42	0.47
Mysella tumida	0.55	0.46	0.32	0.01
Mytilus trossulus	0.24	0.05	0.00	0.00
Nassarius mendicus	0.00	0.00	0.00	0.00
Nemertean (unident.)	0.07	0.11	0.01	0.04
Neotrypaea californiensis	0.51	0.03	0.00	1.00
Neorhodomela larix	0.44	0.46	0.42	0.00
Neoamphitrite robusta	0.55	0.46	0.32	0.01
Nephtys caeca	0.63	0.56	0.65	0.08
Nephtys caecoides	0.73	0.46	0.09	0.04
Nephtys ferruginea	0.15	0.08	0.73	0.00
Nephtys longosetosa	0.44	0.46	0.57	0.47
Nephtys sp. (unident.)	0.11	0.82	0.13	0.00
Nereis limnicola	0.44	0.46	0.57	0.47
Nereis procera	0.39	0.50	0.99	0.00
Nereis vexillosa	0.00	0.00	0.00	0.00
Nereis zonata	0.44	0.46	0.57	0.47
Nicomache ?personata	0.44	0.46	0.33	0.47
Notomastus lineatus	0.08	0.90	0.15	0.00
Notomastus tenuis	0.08	0.90	0.02	0.00
Nucella canaliculata	0.19	0.42	0.10	0.00
Nucella lamellosa	0.22	0.00	0.00	0.00
Odonthalia floccosa	0.32	0.23	0.01	0.00
Odostomia sp. (unident.)	0.44	0.00	0.42	0.98
Onchidoris bilamellata	0.03	0.00	0.00	0.00
Onuphis iridescens	0.60	0.46	0.42	0.47
Ostrea lurida	0.44	0.46	0.57	0.47
Owenia fusiformis	0.22	0.20	0.01	0.43
Pagurus spp.	0.22	0.33	0.36	0.00
Pectinaria granulata	0.52	0.07	0.04	0.00
Pherusa plumosa	0.44	0.46	0.32	0.00
Phoronopsis harmeri	0.67	0.52	0.00	0.00
Pholoe minuta	0.40	0.57	0.02	0.00

Table 3. Continued

Pinnixia faba	0.80	0.46	0.32	0.47
Pinnixia schmitti	0.37	0.02	0.86	0.90
Pinnotherid sp. (unident.)	0.52	0.00	0.73	1.00
Platynereis bicanaliculata	0.60	0.46	0.42	0.47
Pododesmus cepio	0.37	0.01	0.00	0.00
Podarkeopsis glabrus	0.20	0.71	0.25	0.03
Podarke pugettensis	0.53	0.34	0.05	0.01
Polydora columbiana	0.44	0.46	0.57	0.47
Polinices lewisii	0.80	0.46	0.32	0.47
Polynoid (unident., in quadrat)	0.56	0.00	0.00	0.27
Polysiphonia sp. (unident.)	0.19	0.29	0.00	0.00
Porphyra sp.	0.54	0.25	0.00	0.00
Prionospio multibranchiata	0.44	0.46	0.57	0.47
Prionospio steenstrupi	0.41	0.22	0.01	0.00
Prionitis sp. (unident.)	0.02	0.32	0.13	0.97
Protothaca staminea juv.	0.27	0.10	0.00	0.00
Protothaca staminea	0.27	0.10	0.43	0.00
Pugettia gracilis	0.23	0.08	0.03	0.00
Punctaria expansa	0.60	0.13	0.00	0.00
Red encrusting algae (unid.)	0.02	0.80	0.00	0.00
Sabellid (unident.)	0.17	0.65	0.43	0.30
Sarcodiotheca sp. (unid.)	0.62	0.21	0.05	0.00
Sargassum muticum	0.24	0.77	0.14	0.02
Saxidomus giganteus	0.45	0.08	0.01	0.00
Saxidomus giganteus juv.	0.40	0.42	0.00	0.00
Scleroplax granulata	0.44	0.40	0.41	0.47
Scolelepis squamata	0.60	0.46	0.42	0.47
Scytosiphon lomentaria	0.22	0.44	0.00	0.00
Semibalanus cariosus	0.08	0.02	0.00	0.00
Serpulid sp. (unident.)	0.44	0.46	0.57	0.47
clam siphons (unidentified)	0.00	0.00	0.08	0.00
Smithora naiadum	0.44	0.46	0.57	0.47
Spiophanes bombyx	0.44	0.06	0.25	0.00
Spio filicornis	0.02	0.28	0.00	0.01
Stronglyocentrotus droebachiensis	0.06	0.02	0.00	0.00
Syllis heterochaeta	0.44	0.46	0.57	0.47
Syllis ?stewarti	0.44	0.46	0.57	0.47
Tanaid (unident.)	0.44	0.04	0.25	0.01
Tectura scutum	0.00	0.46	0.13	0.94
Tellina modesta	0.41	0.45	0.00	0.00
Tellina nuculoides	0.44	0.46	0.57	0.47

Table 3. Continued

Terebellid sp. (unident.)	0.64	0.01	0.06	0.00
Tonicella lineata	0.44	0.46	0.57	0.47
Transenella tantilla	0.59	0.46	0.42	0.47
Tresus capax	0.09	0.11	0.00	0.00
Tresus capax juveniles	0.09	0.11	0.00	0.00
Ulvoids (unident.)	0.29	0.00	0.00	0.00
Zostera marina	0.44	0.46	0.57	0.47

	Within Area	Within Cell	Within Basin	Among Basins
Total significant p-values	24	39	79	111
Total non significant p-values	144	129	89	57
% similar taxa	86	77	53	34

Table 4. Species generally similar in distribution and abundance between historic surveys and 1999 SCALE surveys in Central Puget Sound.

Phylum	Class	Species
Cnidaria	Anthozoa	Anthopleura elegantissima
Annelida	Polychaeta	Armandia brevis
Annelida	Polychaeta	Capitella capitata
Annelida	Polychaeta	Glycinde picta
Annelida	Polychaeta	Hemipodus borealis
Annelida	Polychaeta	Hesionids
Annelida	Polychaeta	Leitoscoloplos pugettensis
Annelida	Polychaeta	Lumbrineris zonata
Annelida	Polychaeta	Mediomastus californiensis
Annelida	Polychaeta	Nephtys spp. (lumped)
Annelida	Polychaeta	Nereis procera
Annelida	Polychaeta	Notomastus lineatus
Annelida	Polychaeta	Notomastus tenuis
Annelida	Polychaeta	Pectinaria granulata
Annelida	Polychaeta	Pholoe minuta
Annelida	Polychaeta	Polynoids (lumped)
Annelida	Polychaeta	Spiochaetopterus costarum in core
Annelida	Polychaeta	large terebellids and orbinids
Arthropoda	Cirripedia	Balanus glandula
Arthropoda	Malacostraca	Ampithoe dalli (as A. simulans in historic)
Arthropoda	Malacostraca	Ampithoe lacertosa
Arthropoda	Malacostraca	Anisogammarus pugettensis
Arthropoda	Malacostraca	Exosphaeroma inornata
Arthropoda	Malacostraca	Fabia subquadrata
Arthropoda	Malacostraca	Hemigrapsus oregonensis
Arthropoda	Malacostraca	Idotea sp.
Arthropoda	Malacostraca	Lophopanopeus bellus bellus
Arthropoda	Malacostraca	Pagurus spp.
Arthropoda	Malacostraca	Pontogeneia spp.
Echinodermata	Echinoidea	Dendraster excentricus
Echinodermata	Holothuroidea	Leptosynapta clarki
Mollusca	Bivalvia	Macoma inquinata
Mollusca	Bivalvia	Macoma nasuta
Mollusca	Bivalvia	Tellina modesta
Mollusca	Gastropoda	Hermisenda crassicornis
Mollusca	Gastropoda	Lacuna vincta
Mollusca	Gastropoda	limpets (some identification differences)
Mollusca	Gastropoda	Onchidoris bilamellata
Mollusca	Polyplacophora	Mopalia lignosa
Nemertea		Nemerteans (lumped)
Phoronida		Phoronopsis harmeri
Platyhelminthes		Flatworm (unident.)
Rhodophyta	Rhodophyceae	Mastocarpus papillatus
Chlorophyta	Chlorophyceae	Ulvoids

Table 5. Species not similar between historic and 1999 surveys

A. Species with apparent sampling differences (methodology):

Annelida	Polychaeta	<i>Glycera capitata</i>	"Uncommon" at historic sites
Annelida	Polychaeta	<i>Ophelia limacina</i>	Mostly higher than 0'
Annelida	Polychaeta	phyllodocid polychaetes	Too small for SCALE sieves?
Annelida	Polychaeta	<i>Saccocirrus eroticus</i>	Probably lives higher on shore
Annelida	Polychaeta	<i>Sigambra</i> sp.	"Uncommon" at historic sites
Annelida	Polychaeta	spionid polychaetes	Too small, also mostly higher on shore
Annelida	Polychaeta	syllid polychaetes	Too small for SCALE sieves?
Arthropoda	Malacostraca	<i>Allorchestes angusta</i>	Mostly higher than 0'
Arthropoda	Malacostraca	<i>Cancer</i> sp.	Larger taxa not sampled well by SCALE
Arthropoda	Malacostraca	<i>Hyale frequens</i>	Mostly higher than 0'
Arthropoda	Malacostraca	<i>Monocorophium acherusicum</i>	Mostly higher than 0'
Arthropoda	Malacostraca	<i>Neotrypaea californiensis</i>	Deeper than most SCALE samples
Arthropoda	Malacostraca	Pinnotherid spp.	commensal in clams (see below)
Arthropoda	Malacostraca	<i>Pugettia gracilis</i>	Larger taxa not sampled well by SCALE
Arthropoda	Malacostraca	Tanaid (unident.)	Too small for SCALE sieves?
Cnidaria	Anthozoa	<i>Anthopleura artemesia</i>	"Uncommon" at historic sites
Cnidaria	Anthozoa	<i>Metridium senile</i>	Mostly on boulders
Mollusca	Bivalvia	<i>Clinocardium nuttallii</i>	Deeper than most SCALE samples
Mollusca	Bivalvia	<i>Macoma balthica</i>	Mostly higher than 0'
Mollusca	Bivalvia	<i>Macoma secta</i>	Deeper than most SCALE samples
Mollusca	Bivalvia	<i>Mya arenaria</i>	Mostly higher than 0'
Mollusca	Bivalvia	<i>Pododesmus cepio</i>	Mostly on boulders
Mollusca	Bivalvia	<i>Protothaca staminea</i>	Deeper than most SCALE samples
Mollusca	Bivalvia	<i>Saxidomus giganteus</i>	Deeper than most SCALE samples
Mollusca	Bivalvia	<i>Tresus capax</i>	Deeper than most SCALE samples
Mollusca	Gastropoda	<i>Melanochlamys diomedea</i>	"Uncommon" at historic sites
Mollusca	Polyplacophora	<i>Mopalia ciliata</i>	"Uncommon" at historic sites

Table 5, continued. Species not similar between historic and 1999 surveys

B. Species not similar, unknown reasons:			More common:	Possible reasons:
Annelida	Polychaeta	Caulleriella ?pacifica	1999	Difficult taxonomy
Annelida	Polychaeta	Eteone spp.	Historic	
Annelida	Polychaeta	Euclymene spp.	1999	Difficult taxonomy
Annelida	Polychaeta	Glycera capitata	Historic	
Annelida	Polychaeta	Onuphis spp.	Historic	
Annelida	Polychaeta	Owenia fusiformis	Historic	
Annelida	Polychaeta	Paleonotus bellis	Historic	
Annelida	Polychaeta	Platynereis bicanaliculata	Historic	
Annelida	Polychaeta	Sigambra sp.	Historic	
Arthropoda	Malacostraca	Americorophium salmonis	Historic	(amphipod)(see below)
Arthropoda	Malacostraca	Aoroides spp.	Historic	(amphipod)
Arthropoda	Malacostraca	Calliopiella spp.	Historic	(amphipod)
Arthropoda	Malacostraca	Exosphaeroma octoncum	Historic	ID? may = E. inornata
Arthropoda	Malacostraca	Hemigrapsus nudus	Historic	
Arthropoda	Malacostraca	Petrolisthes spp.	Historic	(Common at 2 sites)
Arthropoda	Malacostraca	Photis brevipes	Historic	(amphipod)
Arthropoda	Malacostraca	Synchelidium spp.	Historic	(amphipod)
Chordata	Osteichtheyes	Gunnel species	Historic	
Mollusca	Bivalvia	Lucina tenuisculpta	1999	
Mollusca	Bivalvia	Mysella tumida	Historic	
Mollusca	Bivalvia	Tranzenella tantilla	Historic	
Mollusca	Gastropoda	Crepidula dorsata	1999	
Mollusca	Gastropoda	Nassarius mendicus	Historic	
Mollusca	Gastropoda	Nucella lamellosa	Historic	
Mollusca	Gastropoda	Polinices lewisii	Historic	
Phaeophyta	Phaeophyceae	Punctaria expansa	1999	
Phaeophyta	Phaeophyceae	Sargassum muticum	1999	Incr. in invasive sp?
Rhodophyta	Rhodophyceae	Porphyra sp.	1999	
Chlorophyta	Ulvophyceae	Acrosiphonia coalita	1999	

Note:

Because of their mobility, amphipods may all have been undersampled in our cores.

Table 6. Taxa expected at Wells beaches but absent or rare in 1999 samples**Strongly expected at Wells, based on both historic surveys and biota found to north and south in 1999:**

Bivalvia	Anomiidae	Pododesmus cepio	Susp	Common in historic, present in surrounding surveys, absent in 1999
Bivalvia	Mactridae	Tresus capax	Susp	Common in historic and surrounding surveys, absent in 1999
Bivalvia	Tellinidae	Tellina modesta	Susp	Common in historic and surrounding surveys, absent in 1999
Osteichtheys	Gunnels	Primarily Pholis spp.	Carn	Present in historic and surrounding surveys, absent in 1999
Polychaeta	Capitellidae	Capitella capitata	Dep	Present in historic and surrounding surveys, absent in 1999
Polychaeta	Capitellidae	Notomastus lineatus	Dep	Abundant in historic and surrounding surveys, absent in 1999
Polychaeta	Hesionidae	Hesionid sp. (unident.)	Carn	Abundant in historic and surrounding surveys, rare in 1999
Polychaeta	Nereidae	Nereis procera	Omni	Abundant in historic and surrounding surveys, absent in 1999
Polychaeta	Orbiniidae	Leitoscoloplos pugettensis	Dep	Abundant in historic and surrounding surveys, absent in 1999
Polychaeta	Oweniidae	Owenia fusiformis	Dep	Abundant in historic, present in surrounding surveys, absent in 1999
Polychaeta	Pholoidae	Pholoe minuta	Dep	Common in historic and surrounding surveys, absent in 1999
Polychaeta	Spionidae	Malacoceros glutaeus	Dep/Susp	Common in historic and more-southern 1999 surveys
Polychaeta	Spionidae	Prionospio steenstrupi	Dep/Susp	Common in historic and surrounding surveys, absent in 1999
	Phoronidae	Phoronopsis harmeri	Susp	Common in historic and surrounding surveys, absent in 1999
Malacostraca	Anisogammaridae	Anisogammarus pugettensis	Scav	Common in historic and surrounding surveys, absent in 1999

Expected to be more abundant at Wells than actually seen, based on either historic or 1999 surveys

Bivalvia	Veneridae	Protothaca staminea	Susp	Abundant in historic surveys, rare in 1999 to north and south
Bivalvia	Veneridae	Saxidomus giganteus	Susp	Abundant in historic surveys, rare in 1999 to north and south
Gastropoda	Calyptraeidae	Crepidula dorsata	Susp	1999 only, both north and south
Gastropoda	Facelinidae	Hermisenda crassicornis	Carn	Present to both north and south in 1999
Malacostraca	Sphaeromatidae	Gnorimosphaeroma oregonense	Scav	Abundant in historic surveys, now at only 1 of 3 sites
Platyhelminthes		Flatworms (unident.)	Carn	Common in historic and 1999 surveys north and south, rare in 1999
Polychaeta	Cirratulidae	Caulleriella ?pacifica	Dep	1999 only, both north and south
Polychaeta	Dorvilleidae	Dorvillea spp.	Carn	Dorvilleids common in historic surveys
Polychaeta	Terebellidae	Terebellids and orbiniids	Dep	Abundant in historic and surrounding surveys, rare in 1999
Polyplacophora	Mopaliidae	Mopalia lignosa	Herb	Abundant in historic and surrounding surveys, rare in 1999

Table 7. Taxa found in SCALE surveys (rare species omitted) and a qualitative categorization of their overall distribution in Puget Sound.

Taxa found throughout the Sound

Acrosiphonia coalita
 Allorchestes angusta
 Americorophium salmonis
 Ampithoe dalli
 Ampithoe lacertosa
 Anisogammarus pugettensis
 Balanus glandula
 Cerebratulus sp.
 Clinocardium nuttallii
 Crepidula dorsata
 Eogammarus oclairi
 Flatworm (unident.)
 Harmothoe imbricata
 Hemigrapsus nudus
 Hemigrapsus oregonensis
 Hemipodus borealis
 Lepidonotus squamatus
 Lophopanopeus bellus bellus
 Lottia pelta
 Metridium senile
 Monocorophium acherusicum
 Mopalia lignosa
 Mytilus trossulus
 Nemertean (unident.)
 Nephtys caeca
 Nephtys caecoides
 Nereis procera
 Notomastus lineatus
 Nucella lamellosa
 Pagurus spp.
 Polysiphonia spp.
 Porphyra sp.
 Protothaca staminea
 Punctaria expansa
 Red encrusting algae
 Saxidomus giganteus
 Scytosiphon lomentaria
 Spiochaetopterus costarum
 Spiophanes berkeleyorum
 Terebellid spp.
 Ulvoids

Patchy taxa

Axiothella rubrocincta
 Cancer sp.
 Caulacanthus sp.
 Cryptomya californica
 Dendraster excentricus
 Diopatra ornata
 Euclymene sp.B (cf. zonalis)
 Haminoea vesicula
 Leptasterias hexactis
 Macoma nasuta
 Macoma secta
 Mya arenaria
 Neotrypaea californiensis
 Onchidoris bilamellata
 Pinnixia spp.
 Platynereis bicanaliculata
 Polinices lewisii
 Sabellid (unident.)
 Upogebia pugettensis
 Zostera marina

Table 7, continued.

Taxa more common in Central and Northern Puget Sound

Amphiodia periercta	Pododesmus cepio
Amphiodia urtica	Pontogeneia ivanovi
Amphipholis squamata	Prionospio steenstrupi
Anthopleura elegantissima	Pugettia producta
Armandia brevis	Sarcodiotheca sp. (unid.)
Calliostoma sp.	Sargassum muticum
Capitella capitata	Semibalanus cariosus
Caulleriella ?pacifica	Spio filicornis
Cirratulus spp.	Spiophanes bombyx
Desmarestia viridis	Stronglyocentrotus droebachiensis
Dorvillea annulata	Tellina modesta
Exosphaeroma inornata	Transennella tantilla
Fabia subquadrata	Tresus capax
Glycera americana	
Glycinde picta	
Gnorimosphaeroma oregonense	
Gunnel (unident.)	
Hermisenda crassicornis	
Hesionid spp.	
Hyale frequens	
Idotea sp.	
Lacuna vincta	
Laminaria saccharina	
Leitoscoloplos pugettensis	
Leptochelia dubia	
Lirularia succincta	
Lottia strigatella	
Lucina tenuisculpta	
Lumbrineris zonata	
Macoma balthica	
Macoma inquinata	
Malacoceros glutæus	
Mastocarpus papillatus	
Mazzaella heterocarpa	
Mazzaella splendens	
Mediomastus californiensis	
Mysella tumida	
Neoamphitrite robusta	
Nucella canaliculata	
Odonthalia floccosa	
Odostomia sp. (unid.)	
Owenia fusiformis	
Pectinaria granulata	
Pholoe minuta	
Phoronopsis harmeri	

Taxa more common in the South

Alia gausapata
Ampelisca agassizi
Crepidula fornicata
Edwardsia sipunculoides
Edwardsia sp.
Gracilaria pacifica
Leptosynapta clarki
Littorina scutulata
Nassarius mendicus
Notomastus tenuis
Saccoglossus sp.