## ATTACHMENT 4 SCUBA Survey Results

## SCUBA Survey Results for Site 1 - April 12, 2013

### Armina   Californica   Striped nudibranch   few   ### Armina   Striped nudibranch   few   ##	Genus	Species	Common Name	Relative abundance <sup>1</sup>
Metridium         farcimen         plumose anemone         few           Peachia         quinquecapitata         jelly-dwelling anemone         rare           Ptilosarcus         gurneyi         sea pen         abundant           MOLLUSCA           Calliostoma         sp.         topsnail         few           Ceratostoma         foliatum         leafy hornmouth         rare           Evalea         tenuisculpta         Odostome snail         few           Clinocardium         nuttallii         Nuttall's cockle         rare           Tresus         capax         fat gaper clam         rare           Humalaria         kennerleyi         Kennerly's venus clam shell         few           Macoma         nasuta         bent-nose macoma shell         few           Saxidomus         giganteus         butter clam shell         few           Armina         californica         striped nudibranch         few           Dendronotus         albopunctatus         white-spotted dendronotus         abundant           Melibe         leonina         hooded nudibranch         few           Hermissenda         crassicornis         opalescent nudibranch         abundant           M	COELENTERATES			
Peachia       quinquecapitata       jelly-dwelling anemone       rare         Ptilosarcus       gurneyi       sea pen       abundant         MOLLUSCA         Calliostoma       sp.       topsnail       few         Ceratostoma       foliatum       leafy hornmouth       rare         Evalea       tenuisculpta       Odostome snail       few         Clinocardium       nuttallii       Nuttall's cockle       rare         Tresus       capax       fat gaper clam       rare         Humalaria       kennerleyi       Kennerly's venus clam shell       few         Macoma       nasuta       bent-nose macoma shell       few         Saxidomus       giganteus       butter clam shell       few         Armina       californica       striped nudibranch       few         Dendronotus       albopunctatus       white-spotted dendronotus       abundant         Melibe       leonina       hooded nudibranch       few         Hermissenda       crassicornis       opalescent nudibranch       few         ANNELIDA         Pista       sp.       spaghetti worm       few         Myxicola       sp.       sp.       funnel shaped polycheate       rare	Halacampa	decemtentaculata	dwarf sand-dwelling anemone	rare
Ptilosarcus     gurneyi     sea pen     abundant       MOLLUSCA       Calliostoma     sp.     topsnail     few       Ceratostoma     foliatum     leafy hornmouth     rare       Evalea     tenuisculpta     Odostome snail     few       Clinocardium     nuttallii     Nuttall's cockle     rare       Tresus     capax     fat gaper clam     rare       Humalaria     kennerleyi     Kennerly's venus clam shell     few       Macoma     nasuta     bent-nose macoma shell     few       Saxidomus     giganteus     butter clam shell     few       Armina     californica     striped nudibranch     few       Dendronotus     albopunctatus     white-spotted dendronotus     abundant       Melibe     leonina     hooded nudibranch     few       Hermissenda     crassicornis     opalescent nudibranch     few       ANNELIDA       Pista     sp.     spaghetti worm     few       Myxicola     sp.     funnel shaped polycheate     rare       -     sand worm tubes (unidentified tube worms)     abundant       -     parchment worm tubes (unidentified tube worms)     common       ARTHROPODA       Mysiidacea     -     Mysiid shrimp     comm	Metridium	farcimen	plumose anemone	few
MOLLUSCACalliostomasp.topsnailfewCeratostomafoliatumleafy hornmouthrareEvaleatenuisculptaOdostome snailfewClinocardiumnuttalliiNuttall's cocklerareTresuscapaxfat gaper clamrareHumalariakennerleyiKennerly's venus clam shellfewMacomanasutabent-nose macoma shellfewSaxidomusgiganteusbutter clam shellfewArminacalifornicastriped nudibranchfewDendronotusalbopunctatuswhite-spotted dendronotusabundantMelibeleoninahooded nudibranchfewHermissendacrassicornisopalescent nudibranchabundantANNELIDAPistasp.spagetti wormfewMyxicolasp.funnel shaped polycheaterare-sand worm tubes (unidentified tube worms)abundantparchment worm tubes (unidentified tube worms)commonARTHROPODAMysiidacea-Mysiid shrimpcommonBalanussp.barnacles on shellscommonMatacarcinusmagisterDungeness crabfewPagurusochotensisAlaskan hermitfew	Peachia	quinquecapitata	jelly-dwelling anemone	rare
Calliostomasp.topsnailfewCeratostomafoliatumleafy hornmouthrareEvaleatenuisculptaOdostome snailfewClinocardiumnuttalliiNuttall's cocklerareTresuscapaxfat gaper clamrareHumalariakennerleyiKennerly's venus clam shellfewMacomanasutabent-nose macoma shellfewSaxidomusgiganteusbutter clam shellfewArminacalifornicastriped nudibranchfewDendronotusalbopunctatuswhite-spotted dendronotusabundantMelibeleoninahooded nudibranchfewHermissendacrassicornisopalescent nudibranchfewANNELIDAPistasp.spaghetti wormfew-sp.funnel shaped polycheaterare-sand worm tubes (unidentified tube worms)abundantparchment worm tubes (unidentified tube worms)commonARTHROPODAMysiidacea-Mysiid shrimpcommonBalanussp.barnacles on shellscommonMatacarcinusmagisterDungeness crabfewPagurusochotensisAlaskan hermitfew	Ptilosarcus	gurneyi	sea pen	abundant
Ceratostoma       foliatum       leafy hornmouth       rare         Evalea       tenuisculpta       Odostome snail       few         Clinocardium       nuttallii       Nuttall's cockle       rare         Tresus       capax       fat gaper clam       rare         Humalaria       kennerleyi       Kennerly's venus clam shell       few         Macoma       nasuta       bent-nose macoma shell       few         Saxidomus       giganteus       butter clam shell       few         Armina       californica       striped nudibranch       few         Dendronotus       albopunctatus       white-spotted dendronotus       abundant         Melibe       leonina       hooded nudibranch       few         Hermissenda       crassicornis       opalescent nudibranch       few         ANNELIDA       sp.       spaghetti worm       few         Myxicola       sp.       spaghetti worm       few         Myxicola       sp.       funnel shaped polycheate       rare         -       sand worm tubes (unidentified tube worms)       abundant         -       parchment worm tubes (unidentified tube worms)       common         ARTHROPODA         Mysiidacea       -	MOLLUSCA			
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Armina californica striped nudibranch few Dendronotus albopunctatus white-spotted dendronotus abundant Melibe leonina hooded nudibranch few Hermissenda crassicornis opalescent nudibranch abundant  ANNELIDA  Pista sp. spaghetti worm few Myxicola sp. funnel shaped polycheate rare  sand worm tubes (unidentified tube worms)  - parchment worm tubes (unidentified tube worms)  ARTHROPODA  Mysiidacea - Mysiid shrimp common  Balanus sp. barnacles on shells common  Matacarcinus magister Dungeness crab few  Pagurus ochotensis Alaskan hermit few	Macoma	nasuta	bent-nose macoma shell	few
Dendronotusalbopunctatuswhite-spotted dendronotusabundantMelibeleoninahooded nudibranchfewHermissendacrassicornisopalescent nudibranchabundantANNELIDAPistasp.spaghetti wormfewMyxicolasp.funnel shaped polycheateraresand worm tubes (unidentified tube worms)abundantparchment worm tubes (unidentified tube worms)commonARTHROPODAmysiid shrimpcommonBalanussp.barnacles on shellscommonMatacarcinusmagisterDungeness crabfewPagurusochotensisAlaskan hermitfew	Saxidomus	giganteus	butter clam shell	few
Melibe       leonina       hooded nudibranch       few         Hermissenda       crassicornis       opalescent nudibranch       abundant         ANNELIDA       Sp.       spaghetti worm       few         Myxicola       sp.       funnel shaped polycheate       rare         -       -       sand worm tubes (unidentified tube worms)       abundant         -       parchment worm tubes (unidentified tube worms)       common         ARTHROPODA       Mysiid shrimp       common         Balanus       sp.       barnacles on shells       common         Matacarcinus       magister       Dungeness crab       few         Pagurus       ochotensis       Alaskan hermit       few	Armina	californica	striped nudibranch	few
Hermissenda     crassicornis     opalescent nudibranch     abundant       ANNELIDA       Pista     sp.     spaghetti worm     few       Myxicola     sp.     funnel shaped polycheate     rare       -     -     sand worm tubes (unidentified tube worms)     abundant       -     -     parchment worm tubes (unidentified tube worms)     common       ARTHROPODA       Mysiidacea     -     Mysiid shrimp     common       Balanus     sp.     barnacles on shells     common       Matacarcinus     magister     Dungeness crab     few       Pagurus     ochotensis     Alaskan hermit     few	Dendronotus	albopunctatus	white-spotted dendronotus	abundant
Pista sp. spaghetti worm few  Myxicola sp. funnel shaped polycheate rare  sand worm tubes (unidentified tube worms)  - parchment worm tubes (unidentified tube worms)  ARTHROPODA  Mysiidacea - Mysiid shrimp common  Balanus sp. barnacles on shells common  Matacarcinus magister Dungeness crab few  Pagurus ochotensis Alaskan hermit few	Melibe	leonina	hooded nudibranch	few
Pistasp.spaghetti wormfewMyxicolasp.funnel shaped polycheateraresand worm tubes (unidentified tube worms)abundantparchment worm tubes (unidentified tube worms)commonARTHROPODAMysiid shrimpcommonBalanussp.barnacles on shellscommonMatacarcinusmagisterDungeness crabfewPagurusochotensisAlaskan hermitfew	Hermissenda	crassicornis	opalescent nudibranch	abundant
Myxicola       sp.       funnel shaped polycheate       rare         -       -       sand worm tubes (unidentified tube worms)       abundant         -       -       parchment worm tubes (unidentified tube worms)       common         ARTHROPODA       -       Mysiid shrimp       common         Balanus       sp.       barnacles on shells       common         Matacarcinus       magister       Dungeness crab       few         Pagurus       ochotensis       Alaskan hermit       few	ANNELIDA			
- sand worm tubes (unidentified tube worms) abundant  - parchment worm tubes (unidentified tube worms) common  ARTHROPODA  Mysiidacea - Mysiid shrimp common  Balanus sp. barnacles on shells common  Matacarcinus magister Dungeness crab few  Pagurus ochotensis Alaskan hermit few	Pista	sp.	spaghetti worm	few
tube worms)  - tube worms)  - parchment worm tubes (unidentified tube worms)  ARTHROPODA  Mysiidacea - Mysiid shrimp common  Balanus sp. barnacles on shells common  Matacarcinus magister Dungeness crab few  Pagurus ochotensis Alaskan hermit few	Myxicola	sp.	funnel shaped polycheate	rare
ARTHROPODA  Mysiidacea - Mysiid shrimp common  Balanus sp. barnacles on shells common  Matacarcinus magister Dungeness crab few  Pagurus ochotensis Alaskan hermit few	-	-		abundant
Mysiidacea-Mysiid shrimpcommonBalanussp.barnacles on shellscommonMatacarcinusmagisterDungeness crabfewPagurusochotensisAlaskan hermitfew	-	-		common
Balanussp.barnacles on shellscommonMatacarcinusmagisterDungeness crabfewPagurusochotensisAlaskan hermitfew	ARTHROPODA			
MatacarcinusmagisterDungeness crabfewPagurusochotensisAlaskan hermitfew	Mysiidacea	-	Mysiid shrimp	common
Pagurus ochotensis Alaskan hermit few	Balanus	sp.	barnacles on shells	common
	Matacarcinus	magister	Dungeness crab	few
	Pagurus	ochotensis	Alaskan hermit	few
- unidentified hermit crab common	-	-	unidentified hermit crab	common
<b>ECHINODERMS</b>	ECHINODERMS			
Dermasteriasimbricataleather starfew	Dermasterias	imbricata	leather star	few
Luidia foliolata sand star few	Luidia	foliolata	sand star	few
Pisaster brevispinus pink star few	Pisaster	brevispinus	pink star	few
Pycnopodia   helianthoides   sunflower star   few	Pycnopodia	helianthoides	sunflower star	few
Amphiodia sp. cf. burrowing brittle star abundant	Amphiodia	sp.	cf. burrowing brittle star	abundant

<sup>&</sup>lt;sup>1</sup> See table below for relative abundance scale

## SCUBA Survey Results for Site 2 - April 12, 2013

COELENTERATESHalacampadecemtentaculatadwarf sand-dwelling anemonerareMetridiumfarcimenplumose anemonefewPeachiaquinquecapitatajelly-dwelling anemonerarePtilosarcusgurneyisea penabundantMOLLUSCACalliostomasp.topsnailfewCeratostomafoliatumleafy hornmouthrareEvaleatenuisculptaOdostome snailfewClinocardiumnuttalliiNuttall's cocklerareTresuscapaxfat gaper clamrareHumalariakennerleyiKennerly's venus clam shellfewMacomanasutabent-nose macoma shellfew	Genus				
Metridiumfarcimenplumose anemonefewPeachiaquinquecapitatajelly-dwelling anemonerarePtilosarcusgurneyisea penabundantMOLLUSCACalliostomasp.topsnailfewCeratostomafoliatumleafy hornmouthrareEvaleatenuisculptaOdostome snailfewClinocardiumnuttalliiNuttall's cocklerareTresuscapaxfat gaper clamrareHumalariakennerleyiKennerly's venus clam shellfewMacomanasutabent-nose macoma shellfew	LENTERATES				
Peachia quinquecapitata jelly-dwelling anemone rare  Ptilosarcus gurneyi sea pen abundant  MOLLUSCA  Calliostoma sp. topsnail few  Ceratostoma foliatum leafy hornmouth rare  Evalea tenuisculpta Odostome snail few  Clinocardium nuttallii Nuttall's cockle rare  Tresus capax fat gaper clam rare  Humalaria kennerleyi Kennerly's venus clam shell few  Macoma nasuta bent-nose macoma shell few	acampa				
Ptilosarcus       gurneyi       sea pen       abundant         MOLLUSCA       Calliostoma       sp.       topsnail       few         Ceratostoma       foliatum       leafy hornmouth       rare         Evalea       tenuisculpta       Odostome snail       few         Clinocardium       nuttallii       Nuttall's cockle       rare         Tresus       capax       fat gaper clam       rare         Humalaria       kennerleyi       Kennerly's venus clam shell       few         Macoma       nasuta       bent-nose macoma shell       few	ridium				
MOLLUSCACalliostomasp.topsnailfewCeratostomafoliatumleafy hornmouthrareEvaleatenuisculptaOdostome snailfewClinocardiumnuttalliiNuttall's cocklerareTresuscapaxfat gaper clamrareHumalariakennerleyiKennerly's venus clam shellfewMacomanasutabent-nose macoma shellfew	chia				
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Ceratostoma       foliatum       leafy hornmouth       rare         Evalea       tenuisculpta       Odostome snail       few         Clinocardium       nuttallii       Nuttall's cockle       rare         Tresus       capax       fat gaper clam       rare         Humalaria       kennerleyi       Kennerly's venus clam shell       few         Macoma       nasuta       bent-nose macoma shell       few	LLUSCA				
Evalea     tenuisculpta     Odostome snail     few       Clinocardium     nuttallii     Nuttall's cockle     rare       Tresus     capax     fat gaper clam     rare       Humalaria     kennerleyi     Kennerly's venus clam shell     few       Macoma     nasuta     bent-nose macoma shell     few	iostoma				
Clinocardium       nuttallii       Nuttall's cockle       rare         Tresus       capax       fat gaper clam       rare         Humalaria       kennerleyi       Kennerly's venus clam shell       few         Macoma       nasuta       bent-nose macoma shell       few	atostoma				
Tresuscapaxfat gaper clamrareHumalariakennerleyiKennerly's venus clam shellfewMacomanasutabent-nose macoma shellfew	lea				
HumalariakennerleyiKennerly's venus clam shellfewMacomanasutabent-nose macoma shellfew	ocardium				
Macoma nasuta bent-nose macoma shell few	sus				
	nalaria				
	oma				
Saxidomus giganteus butter clam shell few	idomus				
Armina californica striped nudibranch few	ina				
Dendronotus albopunctatus white-spotted dendronotus abundant	dronotus				
Melibe leonina hooded nudibranch few	be				
Hermissenda crassicornis opalescent nudibranch abundant	missenda				
ANNELIDA					
Pista sp. spaghetti worm few	э				
Myxicola sp. funnel shaped polycheate rare	icola				
- sand worm tubes (unidentified tube worms) abundant					
- parchment worm tubes (unidentified tube worms) common					
ARTHROPODA	HROPODA				
Mysiidacea - Mysiid shrimp common	iidacea				
Balanus sp. barnacles on shells common	nus				
MatacarcinusmagisterDungeness crabfew	acarcinus				
PagurusochotensisAlaskan hermitfew	urus				
- unidentified hermit crab common					
ECHINODERMS	INODERMS				
Dermasterias   imbricata   leather star   few	masterias				
Luidia foliolata sand star few	lia				
Pisaster brevispinus pink star few	ster				
Pycnopodia   helianthoides   sunflower star   few	nopodia				
Amphiodia sp. cf. burrowing brittle star abundant	phiodia				

<sup>&</sup>lt;sup>1</sup> See table below for relative abundance scale

Relative Abundance	Definition
rare	observed only one or two times during the survey
few	observed three to several times
common	observed eight to twenty times
abundant	observed more than twenty times