Appendix A: Fish Species List and Codes

Code	Common Name	Scientific Name
609	Anchovy, Deepbody	*Anchoa compressa*
610	Anchovy, Northern	*Engraulis mordax*
605	Anchovy, Unid	*Engraulididae*
681	Argentine, Pacific	*Argentina sialis*
204	Atka Mackerel	*Pleurogrammus monopterygius*
682	Barracuda, California	*Sphyraena argentea*
770	Barracudina, Unid	*Paralepididae*
475	Bass, Barred Sand	*Paralabrax nebulifer*
476	Bass, Giant Sea	*Stereolepis gigas*
477	Bass, Kelp	*Paralabrax clathratus*
478	Bass, Spotted Sand	*Paralabrax maculatofasciatus*
479	Bass, Striped	*Morone saxatilis*
480	Bass, Unid	*Percichthyidae/Serranidae*
481	Bass, White Sea	*Atractoscion nobilis*
683	Blackchin, Unid	*Neoscopelidae*
684	Blackdragon, Unid	*Idiacanthidae*
685	Blacksmith	*Chromis punctipinnis*
856	Blob Sculpin	*Psychrolutes phrictus*
686	Bonito, Pacific	*Sarda chiliensis*
687	Bristlemouth, Unid	*Gonostomatidae*
688	Butterfish, Pacific	*Peprilus simillimus*
689	Cabezon	*Scorpaenichthys marmoratus*
604	Capelin	*Mallotus villosus*
202	Cod, Pacific	*Gadus macrocephalus*
209	Cod, Pacific Tom	*Microgadus proximus*
690	Combfish, Longspine	*Zaniolepis latipinnis*
691	Combfish, Shortspine	*Zaniolepis frenata*
692	Corbina, California	*Menticirrhus undulatus*
725	Croaker, Black	*Cheilotrema saturnum*
726	Croaker, Spotfin	*Roncador stearnsi*
727	Croaker, Unid	*Sciaenidae*
728	Croaker, White	*Genyonemus lineatus*
729	Croaker, Yellowfin	*Umbrina roncador*
264	Cusk-eel, Basketweave	*Ophidion scrippsae*
261	Cusk-eel, Spotted	*Chilara taylori*
262	Cusk-eel, Unid	*Ophidiidae*
679	Daggertooth	*Anotopterus pharao*
899	Decomposed Fish	*Decomposed fish*
693	Deepsea smelt, Unid	*Bathylagidae*
228	Dolly Varden	*Salvelinus malma*

Code	Common Name	Scientific Name
694	Dolphinfish	*Coryphaena hippurus*
252	Eelpout, Bearded	*Lyconema barbatum*
254	Eelpout, Bigfin	*Lycodes cortezianus*
255	Eelpout, Black	*Lycodes diapterus*
256	Eelpout, Blackbelly	*Lycodopsis pacifica*
257	Eelpout, Blackmouth	*Lycodapus fierasfer*
258	Eelpout, Flatcheek	*Embryx crotalina*
259	Eelpout, Midwater	*Melanostigma pammelas*
260	Eelpout, Pallid	*Lycodapus mandibularis*
868	Eelpout, Snakehead	*Embryx crotalinus*
263	Eelpout, Soft	*Bothrocara molle*
253	Eelpout, Twoline	*Bothrocara brunneum*
250	Eelpout, Unid	*Zoarcidae gnn.*
251	Eelpout, Wattled	*Lycodes palearis*
91	Egg case Unid	*Egg case unid*
601	Eulachon	*Thaleichthys pacificus*
855	Fangtooth	*Anoplogaster cornuta*
777	Fish, Other Id	*Fish other id*
100	Flatfish, Unid	*Pleuronectiformes*
214	Flatnose, Pacific	*Antimora microlepis*
141	Flounder, Arrowtooth	*Atheresthes stomias*
142	Flounder, Starry	*Platichthys stellatus*
858	Flying Fish Unid	*Exocoetidae*
435	Fringehead, Onespot	*Neoclinus uninotatus*
436	Fringehead, Sarcastic	*Neoclinus blanchardi*
667	Garbage/ Trash	*Cans, bottles, old line, etc.*
853	Garibaldi	*Hypsypops rubicundus*
392	Greenling, Kelp	*Hexagrammos decagrammus*
394	Greenling, Painted	*Oxylebius pictus*
393	Greenling, Rock	*Hexagrammos lagocephalus*
390	Greenling, Unid	*Hexagrammidae*
391	Greenling, Whitespotted	*Hexagrammos stelleri*
82	Grenadier, Giant	*Albatrossia pectoralis*
83	Grenadier, Pacific	*Coryphaenoides acrolepis*
84	Grenadier, Popeye	*Coryphaenoides cinereus*
80	Grenadier, Unid	*Macrouridae*
180	Guitarfish, Banded	*Zapteryx exasperata*
181	Guitarfish, Shovelnose	*Rhinobatos productus*
430	Gunnel, Unid	*Pholidae*
695	Hachetfish, Unid	*Sternoptychidae*
850	Hagfish, Black	*Eptatretus deani*
79	Hagfish, Pacific	*Eptatretus stouti*

Code	Common Name	Scientific Name
77	Hagfish, Unid	*Myxinidae*
206	Hake, Pacific	*Merluccius productus*
697	Halfmoon	*Medialuna californiensis*
124	Halibut, California	*Paralichthys californicus*
101	Halibut, Pacific	*Hippoglossus stenolepis*
611	Herring, Pacific	*Clupea pallasii*
612	Herring, Round	*Etrumeus teres*
698	Jack, Yellowtail	*Seriola dorsalis*
740	Kelpfish, Giant	*Heterostichus rostratus*
741	Kelpfish, Striped	*Gibbonsia metzi*
742	Kelpfish, Unid	*Clinidae*
608	King of the Salmon	*Trachipterus altivelis*
75	Lamprey, Pacific	*Lampetra tridentata*
785	Lancetfish, Longnose	*Alepisaurus ferox*
699	Lancetfish, Unid	*Alepisauridae*
700	Laternfish, Unid	*Myctophidae*
150	Lightfish, Unid	*Photichthyidae*
603	Lingcod	*Ophiodon elongatus*
151	Lizardfish, California	*Synodus lucioceps*
152	Loosejaw, Unid	*Malacosteidae*
153	Louvar	*Luvarus imperialis*
530	Lumpsucker, Pacific Spiny	*Eumicrotremus orbis*
525	Lumpsucker, Unid	*Cyclopteridae*
198	Mackerel, Bullet	*Auxis rochei*
197	Mackerel, Frigate	*Auxis thazard*
207	Mackerel, Jack	*Trachurus symmetricus*
199	Mackerel, Pacific	*Scomber japonicus*
196	Mackerel, Unid	*Scombridae*
774	Manefish	*Caristius macropus*
154	Medusafish	*Icichthys lockingtoni*
869	Midshipman (Toadfish), Unid	*Batrachoididae*
664	Midshipman, Plainfin	*Porichthys notatus*
665	Midshipman, Specklefin	*Porichthys myriaster*
810	Mola Mola (Sunfish)	*Mola mola*
155	Mora, Hundred fathom	*Physiculus rastrelliger*
666	Mud, Kelp, Rocks, Wood, etc	*Mud*
156	Mullet, Striped	*Mugil cephalus*
297	Opah	*Lampris gattatus (regious)*
157	Opaleye	*Girella nigricans*
295	Oreo, Oxeye	*Allocyttus folletti*
762	Paperbone, Unid	*Notosudidae*
185	Pipefish, Bay	*Syngnathus leptorynchus*

Code	Common Name	Scientific Name
186	Pipefish, Snubnose	*Cosmocampus arctus*
453	Poacher, Beardless spearnose	*Ganoideus vulsus*
454	Poacher, Bigeye starnose	*Asterotheca pentacantha*
455	Poacher, Blackedge	*Xeneretmus latifrons*
456	Poacher, Blackfin starnose	*Bathyagonus nigripinnis*
457	Poacher, Bluespotted	*Xeneretmus triacanthus*
458	Poacher, Northern spearnose	*Agonopsis vulsa*
459	Poacher, Pricklebreast	*Stellerina xyosterna*
460	Poacher, Pygmy	*Odontopyxis trispinosa*
461	Poacher, Rockhead	*Bothragonus swani*
462	Poacher, Smootheye	*Xeneretmus leiops*
463	Poacher, Southern Spearnose	*Agonopsis sterletus*
464	Poacher, Spinycheek Starnose	*Asterotheca infraspinata*
452	Poacher, Sturgeon	*Podothecus acipenserinus*
465	Poacher, Tubenose	*Pallasina barbata*
450	Poacher, Unid	*Agonidae*
466	Poacher, Warty	*Occella verrucosa*
201	Pollock, Walleye	*Theragra chalcogramma*
158	Pomfret, Pacific	*Brama japonica*
272	Prickleback, Monkeyface	*Cebidichthys violaceus*
750	Prickleback, Unid	*Stichaeidae*
273	Prickleback, Whitebarred	*Poroclinus rothrocki*
205	Prowfish	*Zaprora silenus*
159	Queenfish	*Seriphus politus*
280	Ragfish	*Icosteus aenigmaticus*
99	Ratfish, Spotted	*Hydrolagus colliei*
561	Ray, Bat	*Myliobatis californica*
562	Ray, Pacific Electric	*Torpedo californica*
563	Ray, Unid	*Myliobatoidea*
564	Ribbonfish, Unid	*Trachipteridae*
334	Rockfish, Aurora	*Sebastes aurora*
337	Rockfish, Bank	*Sebastes rufus*
306	Rockfish, Black	*Sebastes melanops*
355	Rockfish, Black and Yellow	*Sebastes chrysomelas*
319	Rockfish, Blackgill	*Sebastes melanostomus*
316	Rockfish, Blue	*Sebastes mystinus*
302	Rockfish, Bocaccio	*Sebastes paucispinus*
356	Rockfish, Bronzespotted	*Sebastes gilli*
332	Rockfish, Brown	*Sebastes auriculatus*
357	Rockfish, Calico	*Sebastes dalli*
314	Rockfish, Canary	*Sebastes pinniger*
358	Rockfish, Chameleon	*Sebastes phillipsi*

Code	Common Name	Scientific Name
325	Rockfish, Chilipepper	*Sebastes goodei*
359	Rockfish, China	*Sebastes nebulosus*
327	Rockfish, Copper	*Sebastes caurinus*
360	Rockfish, Cowcod	*Sebastes levis*
311	Rockfish, Darkblotched	*Sebastes crameri*
361	Rockfish, Dwarf-red	*Sebastes rufianus*
362	Rockfish, Flag	*Sebastes rubrivinctus*
363	Rockfish, Freckled	*Sebastes lentiginosus*
364	Rockfish, Gopher	*Sebastes carnatus*
365	Rockfish, Grass	*Sebastes rastrelliger*
366	Rockfish, Greenblotched	*Sebastes rosenblatti*
339	Rockfish, Greenspotted	*Sebastes chlorostictus*
313	Rockfish, Greenstriped	*Sebastes elongates*
367	Rockfish, Halfbanded	*Sebastes semicinctus*
323	Rockfish, Harlequin	*Sebastes variegatus*
368	Rockfish, Honeycomb	*Sebastes umbrosus*
369	Rockfish, Kelp	*Sebastes atrovirens*
370	Rockfish, Mexican	*Sebastes macdonaldi*
303	Rockfish, Northern	*Sebastes polyspinis*
371	Rockfish, Olive	*Sebastes serranoides*
301	Rockfish, Pacific Ocean Perch	*Sebastes alutus*
372	Rockfish, Pink	*Sebastes eos*
373	Rockfish, Pinkrose	*Sebastes simulator*
374	Rockfish, Puget Sound	*Sebastes emphaeus*
335	Rockfish, Pygmy	*Sebastes wilsoni*
343	Rockfish, Quillback	*Sebastes maliger*
308	Rockfish, Redbanded	*Sebastes babcocki*
324	Rockfish, Redstripe	*Sebastes proriger*
309	Rockfish, Rosethorn	*Sebastes helvomaculatus*
312	Rockfish, Rosy	*Sebastes rosaceus*
307	Rockfish, Rougheye	*Sebastes aleutianus*
375	Rockfish, Semaphore	*Sebastes melanosema*
304	Rockfish, Sharpchin	*Sebastes zacentrus*
318	Rockfish, Shortbelly	*Sebastes jordani*
326	Rockfish, Shortraker	*Sebastes borealis*
354	Rockfish, Shortraker/Rougheye	*Sebastes Shortraker/Rougheye*
310	Rockfish, Silvergray	*Sebastes brevispinus*
376	Rockfish, Speckled	*Sebastes ovalis*
315	Rockfish, Splitnose	*Sebastes diploproa*
377	Rockfish, Squarespot	*Sebastes hopkinsi*
378	Rockfish, Starry	*Sebastes constellatus*
328	Rockfish, Stripetail	*Sebastes saxicola*

Code	Common Name	Scientific Name
379	Rockfish, Swordspine	*Sebastes ensifer*
329	Rockfish, Tiger	*Sebastes nigrocinctus*
380	Rockfish, Treefish	*Sebastes serriceps*
300	Rockfish, Unid.	*Sebastes*
331	Rockfish, Vermilion	*Sebastes miniatus*
305	Rockfish, Widow	*Sebastes entomelas*
322	Rockfish, Yelloweye	*Sebastes ruberrimus*
320	Rockfish, Yellowmouth	*Sebastes reedi*
321	Rockfish, Yellowtail	*Sebastes flavidus*
241	Ronquil, Northern	*Ronquilis jordani*
242	Ronquil, Stripefin	*Rathbunella hypoplecta*
240	Ronquil, Unid	*Bathymasteridae*
200	Roundfish, Unid	*Roundfish unid.*
203	Sablefish	*Anoplopoma fimbria*
221	Salmon, Dog (Chum)	*Oncorhynchus keta*
222	Salmon, King (Chinook)	*Oncorhynchus tshawytscha*
225	Salmon, Pink (Humpback)	*Oncorhynchus gorbuscha*
224	Salmon, Red (Sockeye)	*Oncorhynchus nerka*
223	Salmon, Silver (Coho)	*Oncorhynchus kisutch*
220	Salmon, Unid	*Oncorhynchus*
125	Sanddab, Longfin	*Citharichthys xanthostigma*
137	Sanddab, Pacific	*Citharichthys sordidus*
126	Sanddab, Speckled	*Citharichthys stigmaeus*
136	Sanddab, Unid	*Citharichthys*
239	Sandfish, Pacific	*Trichodon trichodon*
670	Sandlance, Pacific	*Ammodytes hexapterus*
614	Sardine, Pacific	*Sardinops sagax*
607	Saury, Pacific	*Cololabis saira*
790	Scaleless Dragonfish, Unid	*Melanostomiidae*
791	Scaly Dragonfish, Unid	*Stomiidae*
423	Scorpionfish, California	*Scorpaena guttata*
408	Sculpin, Brown Irish Lord	*Hemilepidotus spinosus*
409	Sculpin, Buffalo	*Enophrys bison*
410	Sculpin, Bull	*Enophrys taurina*
411	Sculpin, Fringed	*Icelinus fimbriatus*
412	Sculpin, Grunt	*Rhamphocottus richardsoni*
867	Sculpin, Lavender	*Leiocottus hirundo*
413	Sculpin, Pacific Staghorn	*Leptocottus armatus*
407	Sculpin, Red Irish Lord	*Hemilepidotus hemilepidotus*
414	Sculpin, Roughback	*Chitonotus pugetensis*
415	Sculpin, Sharpnose	*Clinocottus acuticeps*
416	Sculpin, Silverspotted	*Blepsias cirrhosus*

Code	Common Name	Scientific Name
417	Sculpin, Slim	*Radulinus asprellus*
418	Sculpin, Spinyhead	*Dasycottus setiger*
419	Sculpin, Spotfin	*Icelinus tenuis*
420	Sculpin, Thornback	*Paricelinus hopliticus*
421	Sculpin, Threadfin	*Icelinus filamentosus*
400	Sculpin, Unid	*Cottidae*
422	Sculpin, Yellowchin	*Icelinus quadriseriatus*
792	Searobin, Lumptail	*Prionotus stephanophrys*
793	Senorita, Senorita	*Oxyjulis californica*
606	Shad, American	*Alosa sapidissima*
575	Shark, Bigeye Thresher	*Alopias superciliosus*
69	Shark, Blue	*Prionace glauca*
68	Shark, Brown Cat	*Apristurus brunneus*
576	Shark, Brown Smoothhound	*Mustelus henlei*
870	Shark, Cat Unid	*Scyliorhinidae*
577	Shark, Common Thresher	*Alopias vulpinus*
578	Shark, Dogfish Unid	*Squalus sp.*
579	Shark, Filetail Cat	*Parmaturus xaniurus*
580	Shark, Gray Smoothhound	*Mustelus californicus*
581	Shark, Horn	*Heterodontus francisci*
582	Shark, Leopard	*Triakis semifasciata*
852	Shark, Longnose Cat	*Apristurus kampae*
583	Shark, Pacific Angel	*Squatina californica*
584	Shark, Pacific Dogfish	*Squalus suckleyi*
62	Shark, Pacific Sleeper	*Somniosus pacificus*
585	Shark, Pelagic Thresher	*Alopias pelagicus*
586	Shark, Prickly	*Echinorhinus cookei*
78	Shark, Sixgill	*Hexanchus griseus*
64	Shark, Soupfin	*Galeorhinus galeus*
66	Shark, Spiny Dogfish	*Squalus acanthias*
587	Shark, Swell	*Cephaloscyllium ventriosum*
65	Shark, Unid	*Squaliformes*
794	Sheephead, California	*Semicossyphus pulcher*
550	Skate, Big	*Raja binoculata*
551	Skate, Black	*Bathyraja trachura*
552	Skate, California	*Raja inornata*
553	Skate, Deepsea	*Bathyraja abyssicola*
554	Skate, Longnose	*Raja rhina*
555	Skate, Sandpaper	*Bathyraja interupta*
556	Skate, Starry	*Raja stellulata*
557	Skate, Thornback	*Platyrhiniodis triseriata*
90	Skate, Unid	*Rajidae*

Code	Common Name	Scientific Name
558	Skate, White	*Bathyraja spinosissima*
860	Slender Codling	*Halargyreus johnsonii*
160	Slickhead, California	*Alepocephalus tenebrosus*
161	Slickhead, Threadfin	*Talismania bifurcata*
162	Slickhead, Unid.	*Alepocephalidae*
175	Smelt, Jack	*Atherinops californiensis*
176	Smelt, Night	*Spirinchus starksi*
177	Smelt, Surf	*Hypomesus pretiosus*
178	Smelt, Top	*Atherinops affinis*
602	Smelt, Unid	*Osmeridae*
613	Smelt, Whitebait	*Allosmesus elongatus*
857	Smooth Stargazer	*Kathetostoma averruncus*
795	Snaggletooth, Unid	*Astronesthidae*
501	Snailfish, Blacktail	*Careproctus melanurus*
859	Snailfish, Pink	*Paraliparis rosaceus*
502	Snailfish, Prickly	*Paraliparis deani*
503	Snailfish, Ribbon	*Liparis cyclopus*
504	Snailfish, Ringtail	*Liparis rutteri*
505	Snailfish, Showy	*Liparis pulchellus*
506	Snailfish, Slipskin	*Liparis fucensis*
507	Snailfish, Spotted	*Liparis callyodon*
500	Snailfish, Unid	*Liparis*
119	Sole, Bigmouth	*Hippoglossina stomata*
109	Sole, Butter	*Pleuronectes isolepis*
118	Sole, C-O (C-O Turbot)	*Pleuronichthys coenosus*
110	Sole, Deepsea	*Embassichthys bathybius*
107	Sole, Dover	*Microstomus pacificus*
108	Sole, English	*Pleuronectes vetulus*
120	Sole, Fantail	*Xystreurys liolepis*
103	Sole, Flathead	*Hippoglossoides elassodon*
116	Sole, Hybrid	*Inopsetta ischyra*
112	Sole, Petrale	*Eopsetta jordani*
105	Sole, Rex	*Errex zachirus*
104	Sole, Rock	*Pleuronectes bilineatus*
114	Sole, Roughscale	*Clidoderma asperrimum*
115	Sole, Sand	*Psettichthys melanostictus*
111	Sole, Slender	*Eopsetta exilis*
796	Spookfish, Unid	*Opisthoproctidae*
270	Squaretail, Smalleye	*Tetragonurus cuvieri*
226	Steelhead (Rainbow Trout)	*Oncorhynchus mykiss*
559	Stingray, Diamond	*Dasyatis dipterura*
862	Stingray, Pelagic	*Dasyatis violacea*

Code	Common Name	Scientific Name
560	Stingray, Round	*Urolophus halleri*
231	Sturgeon, Green	*Acipenser medirostris*
230	Sturgeon, Unid	*Acipenser*
232	Sturgeon, White	*Acipenser transmontanus*
630	Surfperch, Black	*Embiotoca jacksoni*
631	Surfperch, Calico	*Amphistichus koelzi*
632	Surfperch, Kelp	*Brachyistius frenatus*
633	Surfperch, Pile	*Rhacochilus vacca*
634	Surfperch, Pink	*Zalembius rosaceus*
635	Surfperch, Rainbow	*Hypsurus caryi*
636	Surfperch, Redtail	*Amphistichus rhodoterus*
637	Surfperch, Rubberlip	*Rhacochilus toxotes*
638	Surfperch, Shiner	*Cymatogaster aggregata*
639	Surfperch, Silver	*Hyperprosopon ellipticum*
640	Surfperch, Spotfin	*Hyperprosopon anale*
641	Surfperch, Striped	*Embiotoca lateralis*
642	Surfperch, Unid	*Embiotocidae*
643	Surfperch, Walleye	*Hyperprosopon argenteum*
644	Surfperch, White	*Phanerodon furcatus*
861	Thornback	*Platyrhinoidis triseriata*
352	Thornyhead, Longspine	*Sebastolobus altivelis*
350	Thornyhead, Shortspine	*Sebastolobus alascanus*
349	Thornyhead, Shortspine/ Longspine	*Sebastolobus*
113	Tonguefish, California	*Symphurus atricauda*
854	Triggerfish, Finescale	*Balistes polylepis*
227	Trout, Cutthroat	*Oncorhynchus clarkii*
807	Tubeshoulder, Unid	*Searsiidae*
710	Tuna, Albacore	*Thunnus alalunga*
711	Tuna, Bigeye	*Thunnus obesus*
712	Tuna, Bluefin	*Thunnus thynnus*
713	Tuna, Skipjack	*Euthynnus lineatus*
714	Tuna, Yellowfin	*Thunnus albacares*
117	Turbot, Curlfin	*Pleuronichthys decurrens*
121	Turbot, Diamond	*Hypsopsetta guttulata*
102	Turbot, Greenland	*Reinhardtius hippoglossoides*
122	Turbot, Hornyhead	*Pleuronichthys verticalis*
123	Turbot, Spotted	*Pleuronichthys ritteri*
797	Viperfish, Pacific	*Chauliodus macouni*
805	Viperfish, Unid	*Chauliodontidae*
798	Whitefish, Ocean	*Caulolatilus princeps*
780	Wolf-eel	*Anarrhichthys ocellatus*
783	Wrymouth, Dwarf	*Cryptacanthodes aleutensis*

Code	Common Name	Scientific Name
760	Wrymouth, Giant	*Cryptacanthodes giganteus*
799	Wrymouth, Unid	*Cryptacanthodidae*

Appendix B: Invertebrate Species List and Codes

Code	Common Name	Scientific Name
1206	Amiphpod, Unid	*Amphipoda*
55	Anemone, Unid	*Actiniaria*
1207	Aplacophora, Unid	*Aplachophora*
48	Barnacles, Unid	*Cirripedia*
27	Bivalves, Unid	*Bivalvia*
866	Brachiopod, Unid	*Brachiopoda*
22	Brittle/Basket Star, Unid	*Ophiuroidea*
28	Chiton, Unid	*Neoloricata*
1201	Coral, Black	*Antipatharia*
1202	Coral, Gorgonian	*Gorgonacea*
1203	Coral, Soft	*Alcyonacea*
1204	Coral, Stony	*Scleractinia*
32	Corals, Unid	*Alyconaria*
19	Crab, Angulatus Tanner	*Chionoecetes angulatus*
888	Crab, Arched Swimming	*Callinectes arcuatus*
5	Crab, Armored Box	*Mursia gaudichaudi*
4	Crab, Bairdi Tanner	*Chionoecetes bairdi*
6	Crab, Brown Box	*Lopholithodes foraminatus*
7	Crab, California King	*Paralithodes californiensis*
10	Crab, Cancer Unid	*Cancridae*
39	Crab, Decorator Unid	*Majidae*
871	Crab, Deep-sea Rock	*Glyptolithodes cristatipes*
872	Crab, Deep-sea Spider	*Paralomis manningi*
12	Crab, Dungeness	*Cancer magister*
38	Crab, Flat-legged Spider	*Paralomis verrilli*
873	Crab, Furrowed Rock	*Cancer branneri*
44	Crab, Graceful	*Cancer gracilis*
874	Crab, Green	*Carcinus maenus*
17	Crab, Hair	*Paralomis multispina*
875	Crab, Heart	*Phyllolithodes papillosus*
15	Crab, Hermit Unid	*Paguridae*
876	Crab, Kelp Unid	*Pugettia ssp*
2	Crab, King Unid	*Lithode*
877	Crab, Long-armed Spider	*Macroregonia macrochiera*
840	Crab, Lyre Unid	*Hyas spp.*
878	Crab, Masking	*Loxorhynchus crispatus*
879	Crab, Pacific Rock	*Cancer antennarius*
880	Crab, Porcelain Unid	*Porcellanidae*
881	Crab, Puget Sound King	*Lopholithodes mandtii*

Code	Common Name	Scientific Name
882	Crab, Purple Globe	*Randallia ornata*
9	Crab, Red Rock	*Cancer productus*
883	Crab, Rhinoceros	*Rhinolithodes wosnessenskii*
16	Crab, Scarlet King	*Lithodes couesi*
884	Crab, Sheep	*Loxorhynchus grandis*
885	Crab, Spiky King	*Neolithodes diomedeae*
8	Crab, Spiny King	*Paralithodes rathbuni*
3	Crab, Tanner Unid	*Chionoecetes spp.*
18	Crab, Tanneri Tanner	*Chionoecetes tanneri*
886	Crab, Umbrella Unid	*Cryptolithodes ssp*
1	Crab, Unid	*Brachyura/Anomura*
887	Crab, Xantus Swimming	*Portunus xantusii*
11	Crab, Yellow Rock	*Cancer anthonyi*
53	Crinoids, Unid	*Crinoidea*
892	Crustacean, Unid	*Crustacea*
1205	Hydrocoral	*Hydrocorallinae*
13	Invertebrate, Unid	Animalia
33	Isopod, Unid	*Isopoda*
35	Jellyfish, Unid	*Scyphozoa*
34	Mollusk, Unid	*Mollusca*
25	Nudibranch, Unid	*Nudibranchia*
60	Octopus, Unid	*Octopoda*
1208	Peanut Worm, Unid	*Sipuncula*
41	Sea Cucumber, Unid	*Holothuroidea*
58	Sea Pen/Whip, Unid	*Pennatulacea*
30	Sea Snail, Unid	*Gastropoda*
889	Sea Spider, Unid	*Pycnogonida*
47	Sea Squirts, Unid	*Tunicata Tunicate*
20	Sea Star, Unid	*Asteroidea*
70	Shrimp, Unid	*Caridea*
891	Spiny Lobster, Unid	*Palinura*
26	Sponge, Unid	*Porifera*
890	Squat Lobster, Unid	*Galatheidae*
50	Squid, Unid.	*Teuthoidea*
49	Tunicate, Unid	*Urochordata*
54	Urchin, Unid	*Echinoidea*
1209	Worm, Unid	*Annelida*

Appendix C: Marine Mammal and Sea Turtle Species List and Codes

Code	Common Name	Scientific Name
1001	Beaked Whale, Bairds	*Berardius bairdii*
1002	Beaked Whale, Blainevilles	*Mesoplodon densirostris*
1003	Beaked Whale, Cuviers	*Ziphius cavirostris*
1004	Beaked Whale, Gingko-toothed	*Mesoplodon ginkgodens*
1005	Beaked Whale, Hectors	*Mesoplodon hectori*
1006	Beaked Whale, Hubbs	*Mesoplodon carlhubbsi*
1007	Beaked Whale, Stejnegers	*Mesoplodon stejnegeri*
1008	Beaked Whale, Unid	*Ziphiidae*
1009	Dolphin, Bottlenose	*Tursiops truncatus*
1044	Dolphin, Common Unid	*Delphinus*
1010	Dolphin, Long-beaked Common	*Delphinus capensis*
1011	Dolphin, Northern Right Whale	*Lissodelphis borealis*
1012	Dolphin, Pacific White-sided	*Lagenorhynchus obliquidens*
1013	Dolphin, Rissos	*Grampus griseus*
1014	Dolphin, Short-beaked Common	*Delphinus delphis*
1015	Dolphin, Striped	*Stenella coeruleoalba*
1016	Dolphin, Unid	*Delphinidae*
1017	Fur Seal, Guadalupe	*Arctocephalus townsendi*
1018	Fur Seal, Northern	*Callorhinus ursinus*
1019	Fur Seal, Unid	*Arctocephalinae*
1000	Marine mammal, Unid	*Marine mammal, Unid*
1020	Pinniped, Unid	*Caniformia*
1021	Porpoise, Dalls	*Phocoenoides dalli*
1022	Porpoise, Harbor	*Phocoena phocoena*
1023	Porpoise, Unid	*Phocoenidae*
1024	Sea Lion, California	*Zalophus californianus*
1025	Sea Lion, Stellar	*Eumetopias jubatus*
1026	Sea Lion, Unid	*Otariindae*
1027	Sea Otter	*Enhydra lutris*
1028	Seal, Harbor	*Phoca vitulina*
1029	Seal, Northern Elephant	*Mirounga angustirostris*
1030	Seal, Unid	*Phocidae*
1071	Turtle, Green/Black	*Chelonia mydas/agassizi*
1072	Turtle, Hawksbill	*Eretmochelys imbricata*
1073	Turtle, Leatherback	*Dermochelys coriacea*
1074	Turtle, Loggerhead	*Caretta caretta*
1075	Turtle, Olive Ridley	*Lepidochelys olivacea*
1070	Turtle, Unid	*Chelonidae*

Code	Common Name	Scientific Name
1031	Whale, Blue	*Balaenoptera musculus*
1032	Whale, Dwarf Sperm	*Kogia breviceps*
1033	Whale, Fin	*Balaenoptera physalus*
1034	Whale, Gray	*Eschrichtius robustus*
1035	Whale, Humpback	*Megaptera novaeangliae*
1036	Whale, Killer	*Orcinus orca*
1037	Whale, Minke	*Balaenoptera acutorostrata*
1038	Whale, Northern Right	*Eubalaena glacialis*
1039	Whale, Pygmy Sperm	*Kogia breviceps*
1040	Whale, Sei	*Balaenoptera borealis*
1041	Whale, Short-finned Pilot	*Globicephala macrorhynchus*
1042	Whale, Sperm	*Physeter catodon*
1043	Whale, Unid	*Whale unid.*

Appendix D: Seabirds Species List and Codes

Code	Common Name	Scientific Name
952	Albatross, Black-footed	*Diomedea nigripes*
951	Albatross, Laysan	*Diomedea immutabilis*
950	Albatross, Short-tailed	*Diomedea albatrus*
949	Albatross, Unid	*Diomedeidae*
983	Alcid, Unid	*Alcidae*
996	Auklet, Cassins	*Ptychoramphus aleuticus*
995	Auklet, Rhinoceros	*Cerorhinca monocerata*
900	Bird, Unid	*Aves*
912	Coot, American	*Fulica americana*
962	Cormorant, Brandts	*Phalacrocorax penicillatus*
963	Cormorant, Double-crested	*Phalacrocorax auritus*
964	Cormorant, Pelagic	*Phalacrocorax pelagicus*
961	Cormorant, Unid	*Phalacrocoracidae*
954	Fulmar, Northern	*Fulmarus glacialis*
945	Grebe, Horned	*Podiceps auritus*
942	Grebe, Red-necked	*Podiceps grisegena*
946	Grebe, Unid	*Podicipedidae*
943	Grebe, Western	*Aechmophorus occidentalis*
947	Guillemot, Pigeon	*Cepphus columba*
948	Guillemot, Unid	*Cepphus*
975	Gull, California	*Larus californicus*
979	Gull, Glaucous-winged	*Larus glaucescens*
978	Gull, Heermanns	*Larus heermanni*
977	Gull, Herring	*Larus argentatus*
980	Gull, Mew	*Larus canus*
981	Gull, Ring-billed	*Larus delawarensis*
974	Gull, Unid	*Larinae*
982	Gull, Western	*Larus occidentalis*
976	Kittiwake, Black-legged	*Rissa tridactyla*
941	Loon, Common	*Gavia immer*
940	Loon, Pacific	*Gavia pacifica*
939	Loon, Red-throated	*Gavia stellata*
944	Loon, Unid	*Gaviidae*
989	Murre, Common (Guillemot)	*Uria aalge*
987	Murre, Unid	*Uria*
993	Murrelet, Ancient	*Synthliboramphus antiquus*
994	Murrelet, Marbled	*Brachyramphus marmoratus*
910	Pelican, Brown	*Pelecanus occidentalis*
992	Puffin, Tufted	*Fratercula cirrhata*

Code	Common Name	Scientific Name
953	Shearwater, Black-vented	*Puffinus opisthomelas*
955	Shearwater, Pink-footed	*Puffinus creatopus*
957	Shearwater, Short-tailed	*Puffinus tenuirostris*
956	Shearwater, Sooty	*Puffinus griseus*
959	Storm-Petrel, Black	*Oceanodroma melania*
960	Storm-Petrel, Fork-tailed	*Oceanodroma furcata*
965	Storm-Petrel, Leachs	*Oceanodroma leucorhoa*
966	Storm-Petrel, Least	*Oceanodroma microsoma*
958	Storm-Petrel, Unid	*Hydrobatidae*
911	Tern, Caspian	*Sterna caspia*

Appendix E: Catch Categories and Target Strategies

Note: All catch categories may be used as a target strategy. Do not use target strategies as catch categories

Catch Category	Code	Catch Category	Code
Tuna, Albacore	ALBC	Perch, Pacific Ocean	POP
Flounder, Arrowtooth	ARTH	Sole, Petrale	PTRL
Rockfish, Bank	BANK	Whiting, Pacific	PWHT
Rockfish, Boccacio	BCAC	Greenling, Rock	RCKG
Sole, Butter	BSOL	Sole, Rex	REX
Cabezon	CBZN	Rockfish, WA or CA	ROCK
Halibut, California	CHLB	Sole, Rock	RSOL
Rockfish, Chilipepper	CLPR	Sablefish	SABL
Rockfish, Canary	CNRY	Salmon species	SAMN
Sole, Curlfin	CSOL	Sanddabs, Unspecified	SDAB
Rockfish, Cowcod	CWCD	Sheepshead	SHPD
Rockfish, Darkblotched	DBRK	Skates and Rays, All	SKAT
Crab, Dungeness	DCRB	Rockfish, Small (OR)	SMRK
Sole, Dover	DOVR	Rockfish, Splitnose	SNOS
Shark, Spiny Dogfish	DSRK	Shrimp and Prawns, All	SRMP
Sole, English	EGLS	Rockfish, NearshoreS	SSHR
Grenadier, Unspecified	GRDR	Rockfish, ShelfS	SSLF
Sturgeon, Green	GSTG	Rockfish, SlopeS	SSLP
Greenling, Kelp	KLPG	Sole, Sand	SSOL
Lingcod	LCOD	Thornyhead, Shortspine	SSPN
Rockfish, Large (OR)	LGRK	Shark, Soupfin	SSRK
Thornyhead, Longspine	LSPN	Flounder, Starry	STRY
Rockfish, NearshoreN	NSHR	Crab, Tanner	TCRB
Rockfish, ShelfN	NSLF	Thornyhead, Unspecified	THDS
Rockfish, SlopeN	NSLP	Mackeral, Unspecified	UMCK
Crab, Other	OCRB	Rockfish, Unspecified	URCK
Octopus, Unspecified	OCTP	Croaker, White	WCRK
Flatfish, Other	OFLT	Rockfish, Widow	WDOW
Shark, Other	OSRK	Eel, Wolf	WEEL
Whitefish, Ocean	OWFS	Sturgeon, White	WSTG
Cod, Pacific	PCOD	Rockfish, Yellowtail	YTRK
Halibut, Pacific	PHLB	Seabird	ZBRD
Pollock	PLCK	Miscellaneous, Unidentified	ZMIS
Mackeral, Pacific	PMCK	Mammal, Marine	ZMRM

Target Strategy	Code	Target Strategy	Code
Bottom Rockfish Shelf	BRSH	Miscellaneous	MSC2
Bottom Rockfish Slope	BRSL	Nearshore Mix	NSM
Dover/Thornyheads/Sablefish	DTS	Unknown	UNKN
Deepwater Dover	DWD		

Appendix F: Minor Rockfish Species

North of 40°10' N. lat.	South of 40°10' N. lat.
Nearshore	
black, Sebastes melanops	black, Sebastes melanops
black and yellow, S. chrysolmelas	black and yellow, S. chrysolmelas
blue, S. mystinus	blue, S. mystinus
brown, S. auriculatus	brown, S. auriculatus
calico, S. dallli	**California scorpionfish, Scorpaena guttata**
china, S. nebulosus	calico, S. dalli
copper, S. caurinus	china, S. nebulosus
gopher, S. carnatus	copper, S. caurinus
grass, S. rastrelliger	gopher, S. carnatus
kelp, S. atrovirens	grass, S. rastrelliger
olive, S. serranoides	kelp, S. atrovirens
quillback, S. maliger	olive, S. serranoides
treefish, S. serriceps	quillback, S. maliger
	treefish, S. serriceps
Shelf	
bronzespotted, S. gilli	bronzespotted, S. gilli
bocaccio, S. paucispinis	chameleon, S. phillipsi
chameleon, S. phillipsi	dwarf-red, S. refianus
chilipepper, S. goodie	flag, S. rubrivinctus
cowcod, S. levis	freckled, S. lentiginosus
dwarf-red, S. refianus	greenblotched, S. rosenblatti
flag, S. rubrivinctus	greenspotted, S. chlorostictus
freckled, S. lentiginosus	greenstriped, S. elongates
greenblotched, S. rosenblatti	halfbanded, S. semicinctus
greenspotted, S. chlorostictus	honeycomb, S. umbrosus
greenstriped, S. elongates	mexican, S. macdonaldi
halfbanded, S. semicinctus	pink, S. eos
honeycomb, S. umbrosus	pinkrose, S. simulator
mexican, S. macdonaldi	pygmy, S. wilsoni
pink, S. eos	redstriped, S. proriger
pinkrose, S. simulator	rosethorn, S. helvomaculatus
pygmy, S. wilsoni	rosy, S. rosaceus
redstriped, S. proriger	silvergrey, S. brevispinus
rosethorn, S. helvomaculatus	speckled, S. ovalis
rosy, S. rosaceus	squarespot, S. hopkinsi
silvergrey, S. brevispinus	starry, S. constellatus
speckled, S. ovalis	stripetail, S. csaxicola
squarespot, S. hopkinsi	swordspine, S. ensifer
starry, S. constellatus	tiger, S. nigorcinctus
stripetail, S. csaxicola	vermilion, S. miniatus
swordspine, S. ensifer	yelloweye, S. ruberrimus
tiger, S. nigorcinctus	**yellowtail, S. flavidus**
vermilion, S. miniatus	
yelloweye, S. ruberrimus	

Slope

aurora, S. aurora	aurora, S. aurora
bank, S. rufus	bank, S. rufus
blackgill, S. melanostomus	blackgill, S. melanostomus
darkblotched, S. crameri	darkblotched, S. crameri
redbanded, S. babcocki	**pacific ocean perch, S. alutus**
rougheye, S. aleutianus	redbanded, S. babcocki
sharpchin, S. zacentrus	rougheye, S. aleutianus
shortraker, S. borealis	sharpchin, S. zacentrus
splitnose, S. diploproa	shortraker, S. borealis
yellowmouth, S. reedi	yellowmouth, S. reedi

Rockfish Categories

Currently, many regulations are designed to lessen the impacts of fishing on certain species of rockfish. Rockfish (except thornyheads) are divided into categories north and south of 40°10' N. latitude, depending on the depth where they are often caught: nearshore, shelf, or slope.

"Nearshore" is defined (by the California Nearshore Fishery Management Plan) as the area from the high-tide line offshore to a depth of 120 ft (20 fm). "Shelf" refers to the continental shelf, while "slope" refers to the continental slope.

Note: Species listed in bold have their own catch category names when caught in the opposite region. For example, bocaccio rockfish is listed in bold in the Shelf rockfish list North of 40°10' N. lat., therefore north of 40°10' N. lat., bocaccio rockfish is listed under the catch category NSLF, and south of 40°10' N. lat., bocaccio is in its own catch category: BCAC.

Appendix G: WCGOP Codes

Gear Type

1 - Groundfish Trawl, Footrope < 8 inches (small footrope)
2 - Groundfish Trawl, Footrope > 8 inches (large footrope)
3 - Midwater Trawl
4 - Danish/ Scottish Seine (Trawl)
5 - Other Trawl Gear
6 - Longline or Setnet
7 - Vertical Hook and Line Gear
8 - Pole (Commercial)
9 - Other Hook and Line Gear
10 - Fish Pot
11 - Prawn Trawl
12 - Shrimp Trawl, Single Rigged
13 - Shrimp Trawl, Double Rigged
14 - All Net Gear Except Trawl
15 - All Troll Gear
16 - All Other Miscellaneous Gear
17 - Pineapple Trawl

Gear Performance

1 - No problem
2 - Pot was in the haul
3 - Net hung up
4 - Net ripped
5 - Trawl net or codend lost, pot(s) lost, other gear lost
7 - Other problem – Document other gear related problem in the comments section.

Weight Method

1 - Actual Weight
2 - Bin/ Trawl Alley Volume
3 - Basket Weight Determination (BWD)
4 - Visual Estimate
5 - OTC-Retained
6 - Other
7 - Vessel Estimate
8 - Extrapolation
9 - Length/ Weight Conversion
10 - Codend Estimate
11 - Retained + Discard
13 - Tally Sample

Sample Methods – Species Composition

1 - Whole Haul
2 - Single Basket
3 - Multiple basket (Document # of baskets)
4 - Fixed Gear Sample

Sample Methods – Biospeciemen & Length Frequency

6 - Outside and Nonrandom
7 - Outside and Random
8 - Inside and Nonrandom
9 - Inside and Random

Reason For Discard

1 - Prohibited
2 - Size
3 - Market
4 - Regulation
5 - Other
6 - Drop-off (Line gear only)
7 - Predation

Dissection Type

1 - Scales
2 - Otoliths
3 - Snouts
4 - Tissue

Appendix H: Random Number Table

8	3	7	9	7	2	1	9	6	7	0	5	4	1	4	7	3	5	5	0	7
8	6	3	6	2	0	7	1	8	8	2	8	1	4	6	3	6	7	3	8	4
7	5	5	5	9	2	6	2	6	5	7	1	9	6	4	1	2	4	3	6	9
1	5	9	2	3	6	3	8	7	1	0	8	2	1	4	9	0	9	8	0	1
3	5	0	6	2	9	0	6	7	6	6	5	3	8	5	6	2	5	1	0	6
4	2	1	2	6	3	5	3	6	4	8	9	2	2	9	7	8	5	7	0	3
5	0	3	1	1	4	2	5	2	3	2	6	3	3	4	9	5	4	2	5	2
5	0	6	0	9	4	9	3	4	9	8	7	7	2	4	2	3	5	8	1	3
0	1	6	1	4	7	4	9	7	6	7	9	6	3	4	5	6	7	8	5	9
1	0	6	7	3	4	8	1	2	3	7	1	1	0	8	4	2	1	9	3	8
3	1	7	0	8	0	0	9	7	2	3	0	8	5	5	4	8	7	9	9	1
0	6	2	0	6	6	2	5	1	8	7	6	2	6	3	0	1	4	1	4	8
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6	2	1	2	6	1	6	9	8	2	0	6	6	4	1	5	0	5	2	9	6
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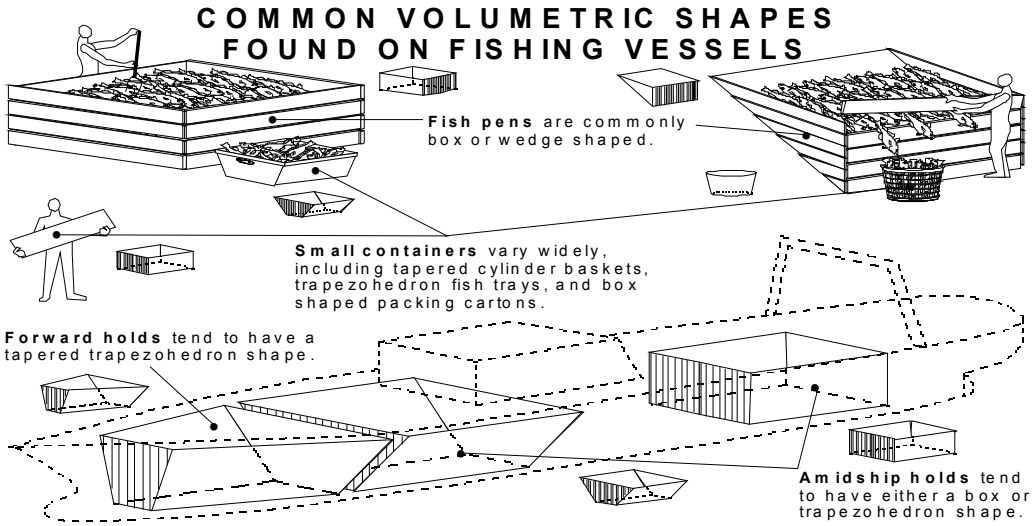
4	8	4	8	9	3	3	5	9	2	3	8	5	5	7	3	9	5	2	3	4
8	2	8	2	8	6	6	8	6	1	6	0	0	4	8	8	9	6	5	6	8
0	2	6	8	8	3	7	2	6	6	8	8	7	4	2	4	1	2	0	3	4
1	9	9	4	8	3	6	0	4	8	9	6	1	5	8	2	5	0	8	2	4

How to Use the Random Number Table

To use the random number table, enter the table at a random point. The easiest way to do this is by closing your eyes and placing your finger on the table. The column and row nearest your finger is the starting point. Determine how many digits in the row you are using: if you need numbers between 1 and 250, use three digits in the row. If you need numbers between 1 and 25, use two digits in the row, and so on. Decide in which direction you will move through the table. Then proceed in any direction through the table (even diagonally), recording appropriate numbers and skipping numbers too high or repeated, until you have enough random numbers. You should decide on a direction and enter the table at a different random starting point every time you use it.

For example, if you need to choose 3 numbers between 1 and 25, you could enter the table by placing your finger on the table to choose a column and row. Your criterion is two digit numbers between 01 and 25 (inclusive). For this example, you decided to work up the column from your starting point. As you move up the column, the first number you encounter is 14. This is a two-digit number between 01 and 25; it fits the criterion, so you write it down. The next number is 09; it also fits the criterion, so you write it down. The next number is 58 and does not fit the criterion so you skip this number. Keep moving up the column, skipping the numbers that do not fit the criterion, until you choose the all the numbers you need.

Appendix I: Weights, Measures, and Conversions



Abbreviations

inch (in)	millimeter (mm)	kilograms (kg)	minute (min)	foot (ft)
centimeter (cm)	metric ton (mt)	pounds (lbs)	meter (m)	liter (L)
ton (t)	kilometer (km)	quart (qt)	mile (mi)	celcius ©
latitude (lat)	farenheit (F)	grams (g)	longitude (lon)	

Weights and Measures

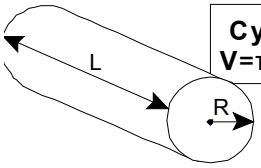
1 in = 2.540 cm 1cm = 10 mm = 0.3937 in
1 ft = 0.3048 m = 0.1667 fathoms 1m = 100 cm = 3.2808 ft = 0.5468 fathoms
1 fathom = 6 ft = 1.829 m 1000 m = 1 km = 0.6214 statute mi
1 L = 1.0567 U.S. qt
F° = (1.8 x C°) + 32C° = 5/9(F° - 32)
1 statute m = 5,280 ft = 1.609 km = 0.86899 nautical mi = 880 fathoms
1 nautical mi = 1.15078 statute mi = 1 min lat = 1.852 km = 1,012.6859 fathoms = 1,852 m
1 fathom = 0.0009875 nautical mi = 0.0011364 statute mi
1 lb = 0.4536 kg
total catch wt. in lbs ÷ 2.2046 = total catch wt. in kg
1 mt = 1,000 kg = 2204.6 lbs.

Area, Volume and Product Formulas

Number of Product Units x Average Unit Weight = Total Weight of Product
Area of a circle = πr^2 Circumference = $2\pi r$ (π = 3.1416)
Area of a square or rectangle = length × width
Area of a triangle = ½ X base X height
Volume of a right angle cone = 1/3 X $\pi r^2 h$
Volume of a Sphere = 4/3 X π X r^3
Length of the triangle hypotenuse "C" where A and B equal the length of the opposite two sides:

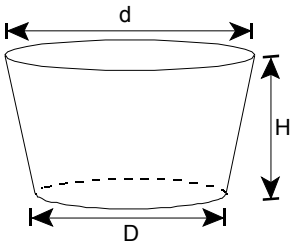
$$A^2 + B^2 = C^2$$

VOLUMETRIC FORMULAS

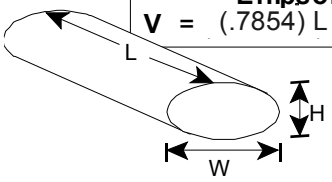


Cylinder
$V = \pi R^2 \times L$

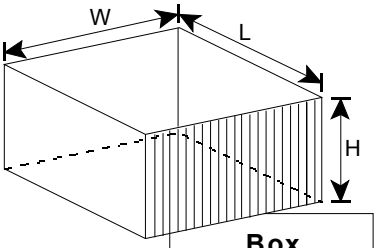
Tapered Cylinder
$V = 0.2618\ H\ (d^2 + D^2 + dD)$



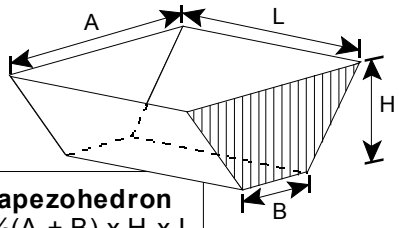
Ellipsoidal
$V = (.7854)\ L \times W \times H$



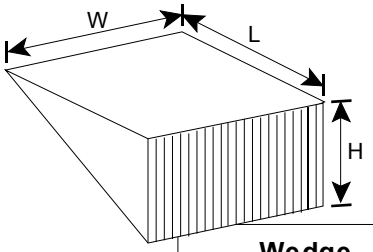
V = Volume
H = Height
L = Length
W = Width
π = 3.1416
D = Diameter
d = diameter
R = Radius



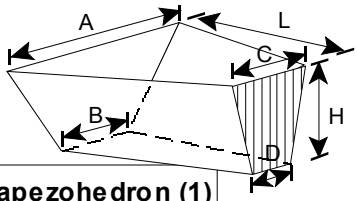
Box
$V = H \times L \times W$



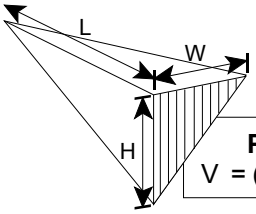
Trapezohedron
$V = \frac{1}{2}(A + B) \times H \times L$



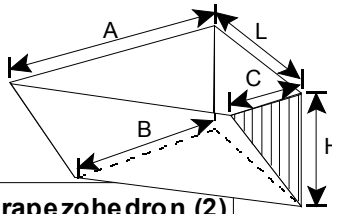
Wedge
$V = \frac{1}{2}(H \times L \times W)$



Tapered Trapezohedron (1)
$V = \frac{1}{4}(A + B + C + D) \times H \times L$



Pyramoidal
$V = (W \times L \times H) \div 6$



Tapered Trapezohedron (2)
$V = \frac{1}{4}(A + B + C) \times H \times L$

APPENDIX I

Appendix J: Pacific halibut Length/Weight Table

Centimeter	Pounds
10	0.02
11	0.02
12	0.02
13	0.04
14	0.04
15	0.07
16	0.07
17	0.09
18	0.11
19	0.13
20	0.15
21	0.18
22	0.20
23	0.24
24	0.26
25	0.31
26	0.35
27	0.40
28	0.46
29	0.51
30	0.57
31	0.62
32	0.71
33	0.77
34	0.84
35	0.93
36	1.01
37	1.10
38	1.21
39	1.32
40	1.43
41	1.59
42	1.68
43	1.81
44	1.94
45	2.09
46	2.25
47	2.43
48	2.58
49	2.76

Centimeter	Pounds
50	2.95
51	3.15
52	3.35
53	3.57
54	3.79
55	4.01
56	4.25
57	4.52
58	4.76
59	5.05
60	5.31
61	5.62
62	5.93
63	6.24
64	6.57
65	6.90
66	7.25
67	7.61
68	7.98
69	8.38
70	8.77
71	9.19
72	9.61
73	10.05
74	10.49
75	10.98
76	11.44
77	11.95
78	12.46
79	12.99
80	13.51
81	14.07
82	14.64
83	15.23
84	15.83
85	16.45
86	17.09
87	17.75
88	18.41
89	19.09

Centimeter	Pounds
90	19.80
91	20.53
92	21.25
93	22.02
94	22.80
95	23.59
96	24.41
97	25.24
98	26.08
99	26.96
100	27.87
101	28.77
102	29.70
103	30.67
104	31.64
105	32.63
106	33.64
107	34.68
108	35.74
109	36.84
110	37.94
111	39.07
112	40.21
113	41.38
114	42.59
115	43.81
116	45.06
117	46.32
118	47.62
119	48.94
120	50.29
121	51.65
122	53.07
123	54.48
124	55.93
125	57.41
126	58.91
127	60.43
128	61.99
129	63.56

Centimeter	Pounds
130	65.17
131	66.82
132	68.48
133	70.17
134	71.89
135	73.66
136	75.44
137	77.25
138	79.08
139	80.95
140	82.87
141	84.79
142	86.75
143	88.76
144	90.79
145	92.84
146	94.93
147	97.05
148	99.21
149	101.39
150	103.62
151	105.87
152	108.16
153	110.50
154	112.83
155	115.24
156	117.66
157	120.13
158	122.62
159	125.16
160	127.71
161	130.32
162	132.96
163	135.65
164	138.36
165	141.12
166	143.90
167	146.72
168	149.54
169	152.49
170	155.45

Centimeter	Pounds
171	158.42
172	161.44
173	164.51
174	167.60
175	170.75
176	173.92
177	177.14
178	180.40
179	183.71
180	187.06
181	190.46
182	193.87
183	197.36
184	200.86
185	204.43
186	208.03
187	211.67
188	214.71
189	218.50
190	222.89
191	226.70
192	230.56
193	234.48
194	238.45
195	242.44
196	246.50
197	250.60
198	255.74
199	258.93
200	263.17
201	267.46
202	271.79
203	276.17
204	280.60
205	285.10
206	289.62
207	294.21
208	298.84
209	303.51
210	308.25
211	313.03

Centimeter	Pounds
212	317.86
213	322.73
214	327.67
215	332.65
216	337.70
217	342.79
218	347.93
219	353.13
220	358.38
221	363.69
222	369.05
223	374.45
224	379.92
225	385.45
226	391.03
227	396.67
228	402.36
229	408.09
230	413.91
231	419.76
232	425.69
233	431.66
234	437.68
235	443.76
236	449.91
237	456.13
238	462.39
239	468.72
240	475.09
241	481.55
242	488.05
243	494.60
244	501.24
245	507.92
246	514.66
247	521.48
248	528.36
249	535.28
250	542.29

Appendix K: Injury Key for Trawl Caught Pacific Halibut

Key to Trawl Injury Codes for Pacific Halibut

1a. Fish is alive..... **Go to 2a**
1b. Fish is dead when sorted from the catch..... **Code DEAD**
Fish is in rigor and lifeless, even if no apparent injuries. Gills appear washed out, i.e., dull red, pink, or white in color. Mouth may contain sediment.

2a. Body of fish appears uninjured, or has only minor injuries... ..... **Go to 3a**
2b. Injuries to fish are significant and obvious ..... **Code DEAD**
Body cavity is ripped open, exposing internal organs. Body tissue may be torn or ripped in a rough, ragged manner. Red hemorrhaging observed on 25% or more of the white side of fish.

3a. Fish is able to close operculum when stimulated..... **Go to 4a**
Operculum is closed strongly or weakly, but pressure is evident. Operculum may not stay closed for long, though pressure may last up to 5 seconds or longer.
3b. Fish cannot close operculum, even when stimulated ..... **Code DEAD**

4a. Fish displays activity and has muscle tone..... ..... **Go to 5a**
Fish displays a minimal amount of activity, especially when stimulated. May be able to clench jaw tightly.
4b. Fish exhibits no muscle tone ..... **Code DEAD**

5a. Fish is not bleeding, or only slightly bleeding, if at all ..... **Go to 6a**
5b. Blood is flowing freely and continuously in large quantities (profusely)... **Code DEAD**
Bleeding is coming from a torn or severed gill arch, or a body injury.

6a. Body injuries are minimal, perhaps difficult to find..... **Go to 7a**
May consist of superficial nicks or cuts on body. Less than
10% of dorsal and anal fin area is frayed.
6b. Body injuries are readily apparent..... **Code POOR**
Skin is damaged with abrasions. Cuts and lacerations in body extend through the skin and just barely into the flesh (not deeply). Dorsal and anal fin area is frayed between 10-50%. Fin edges may be bleeding. Roughly 10-25% of the white side of fish shows red hemorrhaging.

7a. Operculum pressure is strong and sustained ..... **Go to 8a**
7b. Operculum pressure is weak and not sustained..... **Code POOR**

8a. Fish is strong and lively, displaying good muscle tone..... **Go to 9a**
Fish is flopping around the deck , hard to control. Jaw may be tightly clenched, difficult to open.
8b. Fish appears weak..... **Code POOR**
Movement is intermittent, perhaps occurring when provoked or stimulated. Body is limp.

9a. Fish is bleeding from gills..... **Code POOR**
Blood is flowing continuously, slow and steadily, but not profusely. Gills are deep to bright red in color.
9b. No bleeding observed..... **Code EXCELLENT**
Gills are deep red in color.

Appendix L: Injury Key for Pot Caught Pacific Halibut

Key to Pot Injury codes for Pacific Halibut

1a. Fish is alive.....…….. **Go to 2a**
1b. Fish is dead when sorted from the catch .....……. **Code DEAD**
Fish is in rigor and lifeless, even if no apparent injuries. Gills appear washed out, i.e., dull red, pink, or white in color.

2a. No penetration of the body or head by sand fleas.....…… **Go to 3a**
Membranes surrounding eyes and anus are intact, without any holes from sand fleas. A few sand fleas may be seen on body and can be wiped off with your hand. Typically, no penetration has occurred when only a few (e.g., <10) sand fleas are found on the body.
2b. Sand fleas have penetrated the body via the eyes, fins, or anus.....…. **Code DEAD**
Membrane surrounding eye may be partially or completely missing. Dorsal and/or anal fin membranes may be eaten away, leaving fin rays exposed. Skin on the body is separated from tissue where sand fleas have eaten.

3a. No predation of the fish's body by crabs in the pot is noted.....…….. **Go to 4a**
3b. Predation by crabs has occurred….....…… **CODE DEAD**
Crabs in the pot may have attacked and eaten the fish.

4a. Body of fish appears uninjured, or has only minor injuries……..... **Go to 5a**
4b. Injuries to fish are obvious and significant.....……. **Code DEAD**
Body cavity is ripped open, exposing internal organs. Body tissue may be torn or ripped in a rough, ragged manner. Red hemorrhaging observed on 25% or more of the white side of fish.

5a. Fish is able to close operculum when stimulated .....…… **Go to 6a**
Operculum is closed strongly or weakly, but pressure is evident. Operculum may not stay closed for long, though pressure may last up to 5 seconds or longer.
5b. Fish cannot close operculum, even when stimulated.....…… **Code DEAD**

6a. Fish displays activity and has muscle tone .....……. **Go to 7a**
Fish displays a minimal amount of activity, especially when stimulated. May be able to clench jaw, perhaps tightly.
6b. Fish exhibits no muscle tone .....……. **Code DEAD**
Physical activity absent or limited to fin ripples or twitches. Little, if any, response to stimuli. Jaw is hanging open and is slack.

7a. Fish is not bleeding, or only slightly bleeding, if at all .....……... **Go to 8a**
7b. Blood is flowing freely and continuously in large quantity (profusely) .... **Code DEAD**
Bleeding is coming from fin edges or a body injury.

8a. Body injuries are minimal, perhaps difficult to find.....…….. **Go to 9a**
May consist of superficial nicks or cuts on body. Less than 10% of dorsal and anal fin area is frayed. Hemorrhaging of skin on white side limited to 5-10% of surface area.

8b. Body injuries are readily apparent.....…….. **Code POOR**
Skin is damaged with abrasions. Cuts and lacerations in body extend through the skin and just barely into the flesh (not deeply). Dorsal and anal fin area is frayed between 10-50%. Fin edges may be bleeding slightly. Roughly 10-25% of the white side of fish shows red hemorrhaging.

9a. Operculum pressure is strong and sustained .....…….... **Go to 10a**
Fish should be able to close operculum for at least 5-10 seconds.
9b. Operculum pressure is weak and not sustained.....……... **Code POOR**

10a. Fish is strong and lively, displaying good muscle tone.....……... **Go to 11a**
Fish is flopping around the deck, hard to control. Jaw may be tightly clenched, difficult to open.
10b. Fish appears weak .....…… **Code POOR**
Movement is intermittent and of short duration. Perhaps occurring when provoked or stimulated. Body appears limp, not in rigor mortis.

11a. Fish is bleeding from fin edges or body.....……... **Code POOR**
Blood is oozing continuously from fin edges or body wounds. Gills are deep to bright red in color.
11b. No bleeding observed..... .. **Code EXCELLENT**
Gills are deep red in color. Fins are not bleeding.

Appendix M: Injury Key for Hook & Line Caught Pacific Halibut

Injury Key for Hook & Line Caught Pacific Halibut

1a. Fish is alive..... **Go to 2a**
1b. Fish is dead when brought to the surface on the gear ..... **Code DEAD**
Fish is in rigor and lifeless, even if no apparent injuries. Gills appear completely devoid of blood (light pink or white in color).

2a. Body shows no signs of marine mammal predation ..... **Go to 3a**
Fish's body is intact. Flesh may be torn, but no missing tissue.
2b. Body is missing pieces of flesh..... **Code DEAD**
Pieces of tissue are missing from predation by marine mammals.
Missing pieces are typical of bites from sea lions or other large marine mammals.

3a. No penetration of the body or head by sand fleas..... **Go to 4a**
Membranes surrounding eyes and anus are intact, without any holes from sand fleas. A few sand fleas may be seen on body and can be wiped off with your hand. Typically, no penetration occurs when only a few (e.g., <10) sand fleas are found on the body.
3b. Sand fleas have penetrated the body via the eyes, fins, or anus..... **Code DEAD**
Membrane surrounding eye may be partially or completely missing. Dorsal and/or anal fin membranes may be eaten away, leaving finrays exposed. Skin on the body is separated from tissue where sand fleas have eaten.

4a. No wounds of any kind to abdominal organs. Abdominal wall not punctured…. **Go to 5a**
4b. Abdominal organs are damaged, possibly by a gaff ..... **Code DEAD**
Abdominal cavity wall is punctured or torn. Viscera are visible and exposed, and may be protruding.

5a. Fish is not bleeding from gills (but may be bleeding from elsewhere)..... **Go to 6a**
5b. Fish is bleeding from gills..... **Code DEAD**
Bleeding is occurring from a torn or severed gill arch.

6a. Fish is not bleeding at all, or bleeding is minor to moderate (not from gills)…… **Go to 7a**
Blood may be seen around mouth and/or jaw. Blood may be oozing continuously, or bleeding may be continuing very slowly a few drops at a time, or bleeding may have stopped.
6b. Bleeding is severe ..... **Code DEAD**
Blood from any source is flowing freely and continuously in large quantity.

7a. Injuries to head and/ or jaw are minor to moderate..... **Go to 8a**
No structures are missing
7b. Major injuries to head and jaw, resulting in missing pieces..... **Code SEVERE**
Side of the head, possibly including the jaw, has been torn loose and missing from the fish, and/or lower jaw has been torn away and is missing.

8a. Wounds to the head (forward of preopercle and above cheek and jaw) are only surface scratches on the skin ..... **Go to 9a**
8b. Skin on head (forward of preopercle) is ripped and torn deeply..... **Code SEVERE**

Internal organs are likely exposed.

9a. Eye or eye socket is not punctured..... **Go to 10a**
9b. Eye or eye socket is punctured ..... **Code MODERATE**

10a. No wounds to the body are evident..... **Go to 11a**
10b. Wounds in body consist of puncture holes in skin, with possibly a flesh tear..... **Code MODERATE**

11a. Lower jaw is significantly damaged..... **Code MODERATE**
Lower jaw may be broken into 2 pieces at the snout, but each is still attached at the base of the jaw. Jaw may be torn on one side or the other, possibly extending through the cheek.
11b. Damage to lower jaw, if any, is slight..... **Code MINOR**
Injuries include the hook entrance/exit hole around the jaw or in the cheek, or a tear in the cheek. A piece of the lip may be torn and hanging from the jaw. If gangion was cut, the hook and some length of residual gangion may be hanging from the mouth.

Appendix N: List of Observer-Issued Equipment

Safety Gear

Immersion suit
EPIRB
Inflattable Life Vests
Emergency Strobes
Whistle
Hardhats
Earplugs
Knee pads
Knee Pads
Back Brace

Sampling Gear

Platform Scale
Brass 6 lbs. Scale
Brass 25 lbs. Scale
5lb Scale Calibration Weight
Pelican Case for Scale
Headlamp
Disposable Camera
5 Gallon Plastic Buckets
Bucket Lid
Observer Sampling Baskets
Observer Sampling Basket Lid
Victorinox Knives
Spyderco Knife
Fish Pick
Forceps
Scalpel
Clipboard
Hand Counter
Length Frequency Board
Length Frequency Strips
Marine Mammal Tissue Sampling Kit
Measuring Tape Reel
Species ID Guides
Calcualtors

Appendix O: 50 CFR Part 660 Observer Program Regulations

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 660

[Docket No. 000301054–1054; I.D. 053000D]

RIN 0648–AN27

Fisheries off West Coast States and in the Western Pacific; Pacific Coast Groundfish Fishery; Groundfish Observer Program

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Final rule.

SUMMARY: NMFS issues this final rule to amend the regulations implementing the Pacific Coast Groundfish Fishery Management Plan (FMP) to provide for an at-sea observation program on all limited entry and open access catcher vessels. This final rule requires vessels in the groundfish fishery to carry observers when notified by NMFS or its designated agent; establishes notification requirements for vessels that may be required to carry observers; and establishes responsibilities and defines prohibited actions for vessels that are required to carry observers. The at-sea observation program is intended to improve estimates of total catch and fishing mortality.
DATES: Effective May 24, 2001.
ADDRESSES: Copies of the Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis (EA/FRFA) may be obtained from the Pacific Fishery Management Council (Council) by writing to the Council at 2130 SW Fifth Avenue, Suite 224, Portland OR 97201, or by contacting Don McIsaac at 503– 326–6352, or may be obtained from William L. Robinson, Northwest Region, NMFS, 7600 Sand Point Way N.E., BIN C15700, Bldg. 1, Seattle, WA 98115–0070. Send comments regarding the reporting burden estimate or any other aspect of the collection-of-information requirements in this final rule, including suggestions for reducing the burden, to one of the NMFS addresses and to the Office of Management and Budget (OMB), Washington, D.C. 20503 (ATTN: NOAA Desk Officer).
FOR FURTHER INFORMATION CONTACT:
William L. Robinson, Northwest Region, NMFS, 206–526–6140; fax: 206–526– 6736 and e-mail: bill.robinson@noaa.gov or Svein Fougner, Southwest Region, NMFS, 562–980–4000; fax: 562–980–4047 and e-mail: svein.fougner@ noaa.gov.

SUPPLEMENTARY INFORMATION:

Electronic Access
This **Federal Register** document is also accessible via the Internet at the Office of the Federal Register's website at *http://www.access.gpo.gov/su—docs/ aces/aces140.html.*

Background

The U.S. groundfish fisheries off the Washington, Oregon, and California coasts are managed pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 U.S.C. 1801-1883) and the Pacific Coast Groundfish FMP. Regulations implementing the FMP appear at 50 CFR Part 660, Subpart G. The Magnuson-Stevens Act at 16 U.S.C. 1853(b)(8) provides that an FMP may require that one or more observers be carried on-board a vessel of the United States engaged in fishing for species that are subject to the FMP, for the purpose of collecting data necessary for the conservation and management of the fishery. The Pacific Coast Groundfish FMP provides that all fishing vessels operating in the groundfish fishery may be required to accommodate on-board observers for purposes of collecting scientific data. Under the Magnuson-Stevens Act at 16 U.S.C. 1855(d), the Secretary of Commerce, acting through NMFS, has general responsibility to carry out any fishery management plan, and may promulgate such regulations as may be necessary to carry out this responsibility.

With the exception of the mid-water trawl fishery for Pacific whiting, most groundfish vessels sort their catch at sea and discard species that are in excess of cumulative trip limits, unmarketable, in excess of annual allocations, or incidentally caught non-groundfish species. Landed or retained catch is monitored by individual state fish ticket programs in Washington, Oregon, and California. However, because a portion of the catch is discarded at sea, there is no opportunity for NMFS or the states to monitor total catch (retained plus discarded catch) at onshore processing facilities. This lack of information on at-sea discards has resulted in imprecise estimates of total catch and fishing mortality.

Discard information is needed to assess and account for total fishing mortality and to evaluate management measures, including rebuilding plans for over fished stocks. Discard estimates based on limited studies conducted in the mid-1980's, and information on species compositions in landings, are available for some groundfish species. For other species, there is little or no discard information. During the past decade, there have been significant reductions in cumulative trip limits, and trip limits have been applied to increasing numbers of species. In light of these changes in the regulatory regime, doubt has been raised by the Council, NMFS, and the industry about the old discard estimates, which were based on data collected in the 1980's. Accurate estimates of discards are essential to computing total catch, and thus are an important component of any fishery conservation and management program. If the discard estimates are too high, harvest allocations may be set too low; if discard estimates are too low, then harvest allocations may be set too high, and the long-term health of the stock may be jeopardized.

Observers are a uniformly trained group of qualified technicians. They are stationed aboard vessels to gather conservation and management data that are too burdensome for vessel personnel to collect, and which would otherwise not be available for managing the fisheries or assessing interactions with non-groundfish species. The purposes of this final rulemaking are to establish the obligations of vessels that will be required to carry observers; to safeguard the observers' well-being; and to provide for sampling conditions necessary for an observer to follow scientific sampling protocols and thereby maintain the integrity of observer data collections. Nationwide regulations addressing vessels with conditions that are unsafe or inadequate for purposes of carrying an observer are found at 50 CFR 600.746. Nationwide regulations applicable to observers are also found under "General Prohibitions" at 50 CFR 600.725 (o),(r), (s), (t), and (u).

A proposed rule was published on September 14, 2000 (65 FR 55495). Further background information was presented in the preamble of the proposed rule. Public comment on the proposed rule was invited through October 16, 2000. NMFS received three letters containing comments. Two of the three letters, one from the United States Coast Guard and one from the United States Fish and Wildlife Service, expressed support for the proposed observer program. The third letter expressed support, but also expressed concern about funding mechanisms. At its June 2000 Council

meeting, the Council reviewed the observer program and encouraged the public to comment on the proposed rulemaking. One individual provided comment during public hearing at the June Council meeting. The comments are summarized below followed by NMFS' responses to those comments.

Changes to the Final Rule From the Proposed Rule

The final rule includes the following changes from the proposed rule:

1. Section 660.360 (a) was revised forclarity.
2. In Section 660.360 (c)(2) language was added to clarify that vessels using exempted gear types could be required to carry an observer under this rulemaking.
3. Section 660.360 (c)(2)(i) was revised for clarity.
4. Section 660.360 (c)(2)(i)(A), addressing departure reports, is revised from the proposed rule to include language that is intended to provide greater flexibility to vessels that are in port less than 24 hours from the time offloading of catch from one fishing trip begins until the time the vessel departs on the following fishing trip. Because such vessels expect to be on the fishing grounds at the time that they are required to submit the next departure report, the owner, operator, or manager of a vessel is given the option of providing notification to NMFS or its designated agent before departing on the trip prior to that which the observer coverage may be needed and again at the time offloading of the catch from the previous fishing trip begins.
5. Section 660.360 (c)(2)(i)(B), addressing departure reports, is revised from the proposed rule to include language that is intended to provide greater flexibility to vessels that intend to depart on a fishing trip less than 24 hours after weather or sea conditions allow for departure. This change was made in response to comment 3 (below). The West Coast groundfish fleet is composed of many small vessels, whose fishing schedules are heavily influenced by weather and sea conditions. To avoid departure delays, the owner, operator, or manager of a vessel who intends to depart on a fishing trip less than 24 hours after weather or sea conditions become favorable, may choose to inform NMFS or its agent of his/her intentions at least 24 hours before the expected departure time. After the initial notification, only an update 4 hours before the expected departure time would be required.

Comments and Responses

Comment 1: The rulemaking is too narrow; it focuses only on observers as a means for collecting the necessary data at sea.

Response: Other approaches for obtaining total catch data include full retention and data sampling by vessel personnel. NMFS believes that data collected under these approaches would not meet the defined management need without adequate verification, such as video systems for monitoring full retention or observer data to compare to vessel-collected data. Video surveillance systems connected to global positioning systems are useful in tracking activity by area fished, but do not provide the necessary total catch data. New digital camera technology has improved the ability to provide species-specific catch information in particular situations (e.g., fixed gear fisheries with a small variety of species). The technology is still early in development and is generally considered to be supplemental to an observer program.

Comment 2: Some boats may not have the ability to carry an observer. Page 19 of the EA notes that if it is determined that a vessel is simply too small to accommodate an observer alternative methods of sampling may need to be considered. Under these rules, some sectors of the fishery are opted right out of any observer program or any meaningful observation without alternatives such as cameras, or somebody in a zodiac, or full retention, or something like that. Moving forward with an observer program does not preclude further development of other approaches for obtaining the necessary total catch data.

Response: Vessel safety and accommodations are individual vessel issues and are not ones that can be easily addressed. NMFS recognizes that it is likely that some, particularly the smallest groundfish vessels, may not be safe or adequate for carrying observers. Page 19 of the EA notes that if it is determined that a vessel cannot safely accommodate an observer, alternative methods of sampling

may need to be considered. This final rulemaking does not preclude further development of alternative sampling methods for vessels that are determined to be unsuitable for observers.

Comment 3: If you are one of those that is required to have an observer and you do not know 24 hours in advance when you are going, because you are looking for the weather to break, that means a lot of times in the winter that you won't go fishing because you cannot get an observer.

Response: A departure report is necessary for NMFS or its designated agent to identify which vessels need to carry observers and to coordinate the placement of observers aboard vessels. It is necessary for vessel owners, operators or representatives to submit these reports because only they can make statements about their future intent. NMFS recognizes that vessels need to wait for favorable weather and sea conditions before departing on fishing trips. Language has been added to the rule in section 660.360(c)(2)(i)(B) to obtain the necessary information to ensure that an observer is available while allowing for possible delays in vessel schedules as a result of poor weather or sea condition. The initial contact between NMFS and the individual representing the vessel is still necessary to identify that the vessel intends to depart for fishing, when the weather or sea conditions are favorable. As conditions improve, the individual representing the vessel need only provide 4 hours notice before the anticipated departure.

Comment 4: In various places in the EA, it suggests that the program is contingent on Federal funding. If a program is contingent on Federal funding, it would violate the Magnuson Stevens Fishery Conservation and Management Act.

Response: NMFS disagrees with this comment. Nowhere in the rulemaking documents or in the EA does it state that an observer program is contingent on Federal funding. This final rulemaking establishes the framework necessary to support an at-sea observer program. It includes regulations that require vessels to carry observers when notified, provide notification of fishing schedules, provide food and accommodations, and a suitable location for observers to safely collect sample data according to scientific sampling protocols. The analysis examined the impacts resulting from a federally funded program because no additional rulemaking would be required before a program could be implemented if it were federally funded. Therefore, Federal funding was analyzed to facilitate the implementation of an observer program should Federal funding become available. This final rulemaking does not preclude NMFS or the Council from exploring alternative funding options or from providing fishermen with greater compensation for all or a portion of the costs of carrying an observer. Such measures would build upon this final rulemaking and would require additional rulemaking and analysis before implementation.

Classification

NMFS prepared an EA for this final rule and concluded that there will be no significant impact on the human environment as a result of this final rule. This final rulemaking will have no direct biological or physical impacts on the environment. It is NMFS's intention, to provide for observer training and the direct costs of deploying observers including salaries, payroll taxes, employment insurance, medical insurance, pension, and travel costs. The observers' employer will provide protection and indemnity insurance to cover bodily injury or property damage claims that may result from actions of the observer. Vessels will be responsible for providing information regarding their fishing schedule, and food and accommodations, for the observers. Some of the smallest groundfish vessels may find that crew members are displaced because limited bunk space must be allocated to the observer. Vessels will also need to provide adequate sampling facilities and unobstructed access to catch. This may result in increased handling time if sorting of the catch needs to be slowed or centralized to allow an observer to collect samples. Space requirements for analyzing and storing samples may reduce the available work and storage space for vessel activities. It is likely that the smallest groundfish vessels would be most affected by space requirements for analyzing and storing samples. However, without minimal sample space, data quality cannot be assured. The safety, health, and wellbeing of observers while stationed aboard fishing vessels is of the utmost importance. When this final rule is implemented, observer health and safety provisions at 50 CFR 600.725 and 600.746 will apply. A copy of the EA is available from NMFS (see **ADDRESSES**).

NMFS prepared a FRFA describing the impact of the action on small entities. For the purposes of the analysis, all catcher vessels were considered small entities.

This final rulemaking creates the regulatory framework needed to support an on-board observer program and is not predicated on a particular funding mechanism. Federal funding is available for 2001 and NMFS intends to provide for observer training and the direct costs of deploying observers including: salaries, payroll taxes, employment insurance, medical insurance, and travel costs. Observers would be employed directly by NMFS or through a contractor approved by NMFS. The observer's employer will provide protection and indemnity insurance to cover property damage claims that may result from actions of the observer. The individual vessel will be responsible for observer subsistence costs. Costs to the vessel that are analyzed in conjunction with this final rule are costs other than those that would be paid by NMFS. If NMFS chooses to use other funding mechanisms in the future, including shifting costs to the vessels, additional rulemaking would be required.

The costs to industry to deploy observers will vary depending on the coverage strategy that is selected. Three approaches that could be taken in developing a coverage plan include: random selection of trips from a large pool of vessels; complete sampling of all trips taken by a small number of vessels over a specific period; or sampling a portion of trips by an intermediate number of vessels over a specific period. The FRFA states that the impacts of the rule on individual vessels would depend on the nature and size of the program and the coverage approach that is chosen - all vessels in the groundfish fleet or a small portion of the vessels.

Of the 2,116 vessels in the open access and limited entry (LE) fisheries, the number of vessels that could be required to carry an observer annually ranges from 60 (if each observer samples one LE vessel over an entire cumulative trip limit period) to 967 (if observers sample vessel trips at random, no vessel is sampled more than once, and each vessel requires two observers to have all days sampled), depending on the coverage strategy that is employed. The FRFA indicates that the costs to the individual vessel are expected to range between $157 and $3334, depending on the coverage strategy and the number of days fished per year. An upper value of $11,044 per vessel is an extreme that would only occur if a vessel fished every day of the year and carried an observer at all times.

It is most likely that the open access and limited entry groundfish fleets would be divided into sampling sectors based on criteria such as gear type, fishing period, geographical location, or fishing strategy. Each sector may be required to have a different level of observer coverage. Sectors with the greatest annual catch of groundfish or those that most frequently interact with priority species, for which there is a serious need for information, could be required to have a substantially higher proportion of observer coverage than the other sectors. The analysis assumes that only vessels that carry an observer would bear the burden. Among the 2,116 vessels in the open access and limited entry groundfish fisheries that could be selected to bear the cost to carry an observer, there are substantial differences in terms of the annual ex-vessel value of their catch, and therefore in the burden imposed.

There were two alternatives considered in this final rulemaking:
Status quo, and adoption of regulations to support an observer program. Under the status quo alternative, a program could be designed where vessels carry observers on a voluntary basis. However, this would be a voluntary program with no way to ensure that a specific coverage plan could be followed or the integrity of the data collections maintained. Discard information needed to assess and account for total fishing mortality and to evaluate management measures is considered by NMFS to be deficient under a status quo alternative. Adopting regulations for an at-sea observer program on all limited entry and open access catcher vessels establishes the framework for a mandatory observer program, i.e., obligations of vessels that will be required to carry observers; safeguarding the observers' well-being; and providing for sampling conditions necessary for an observer to follow scientific sampling protocols and thereby maintain the integrity of observer data collections.

The Magnuson-Stevens Act at 16 U.S.C. 1853(b)(8) provides that an FMP may require that one or more observers be carried on board a vessel of the United States engaged in fishing for species

that are subject to the plan, for the purpose of collecting data necessary for the conservation and management of the fishery. On March 3, 1999, NMFS determined that the bycatch provisions in Amendment 11 failed to respond meaningfully to the bycatch requirements at Section 303 (a)(11) of the Magnuson-Stevens Act, which state that an FMP must "establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery, and include conservation and management measures that, to the extent practicable and in the following priority—(A) minimize bycatch; and (B) minimize the mortality of bycatch which cannot be avoided." Establishing an observer program to collect total catch data would bring the Pacific coast groundfish FMP closer to the Magnuson-Stevens Act bycatch requirements for a standardized reporting methodology on bycatch. A copy of this analysis is available from NMFS (see **ADDRESSES**).

This final rule contains a collection-of-information requirement subject to the Paperwork Reduction Act (PRA). This collection of information requirement has been approved by OMB under control number 0648–0423. Public reporting burden for these collections of information is estimated to average 5 minutes for making a toll-free call to provide either notification of departure on a fishing trip or notification of intent to cease participating in the fishery. This estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding these burden estimates or any other aspect of the data collection, including suggestions for reducing the burden, to NMFS (see **ADDRESSES**) and to OMB, Washington, DC 20503 (ATTN: NOAA Desk Officer).

Notwithstanding any other provision of the law, no person is required to respond to, nor shall a person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB control number.

NMFS issued Biological Opinions (BOs) under the Endangered Species Act on August 10, 1990, November 26, 1991, August 28, 1992, September 27, 1993, May 14, 1996, and December 15, 1999, pertaining to the effects of the groundfish fishery on chinook salmon (Puget Sound, Snake River spring/ summer, Snake River fall, upper Columbia River spring, lower Columbia River, upper Willamette River, Sacramento River winter, Central Valley, California coastal), coho salmon (Central California coastal, southern Oregon/northern California coastal, Oregon coastal), chum salmon (Hood Canal, Columbia River), sockeye salmon (Snake River, Ozette Lake), steelhead (upper, middle and lower Columbia River, Snake River Basin, upper Willamette River, central California coast, California Central Valley, south-central California, southern California), and cutthroat trout (Umpqua River, southwest Washington/Columbia River). NMFS has concluded that implementation of the FMP for the Pacific Coast groundfish fishery is not expected to jeopardize the continued existence of any endangered or threatened species under the jurisdiction of NMFS, or to result in the destruction or adverse modification of critical habitat.

NMFS has re-initiated consultation on the Pacific whiting fishery associated with the BO issued on December 15, 1999. During the 2000 whiting season, the whiting fisheries exceeded the chinook bycatch amount specified in the BO's incidental take statement's incidental take estimates (11,000 fish) by approximately 500 fish. The reinitiation will focus primarily on additional actions that the whiting fisheries would take to reduce chinook interception, such as time/area management. NMFS expects that the re-initiated BO will be completed by May 2001. During the reinitiation, fishing under the FMP is within the scope of the December 15, 1999, BO, so long as the annual incidental take of chinook stays under the 11,000 fish bycatch limit. NMFS has concluded that implementation of the FMP for the Pacific Coast groundfish fishery is not expected to jeopardize the continued existence of any endangered or threatened species under the jurisdiction of NMFS, or result in the destruction or adverse modification of critical habitat. This final rule implements a data collection program and is within the scope of these consultations. Because the impacts of this action fall within the scope of the impacts considered in these BOs, additional consultations on these species are not required for this action.

This action implements a data collection program and is not expected to result in any adverse effects on marine mammals.

This final rule has been determined to be significant for purposes of Executive Order 12866.

List of Subjects in 50 CFR Part 660

Administrative practice and procedure, American Samoa, Fisheries, Fishing, Guam, Hawaiian Natives, Indians, Northern Mariana Islands, Reporting and recordkeeping requirements.

Dated: April 18, 2001.

John Oliver,

Acting Assistant Administrator for Fisheries, National Marine Fisheries Service.

For the reasons set out in the preamble, NMFS amends 50 CFR part 660 to read as follows:

PART 660—FISHERIES OFF WEST COAST STATES AND IN THE WESTERN PACIFIC

1. The authority citation for part 660continues to read as follows:

Authority: 16 U.S.C. 1801 *et seq.*

2. In § 660.302, the definitions for "Active sampling unit," and "Vessel manager" are added in alphabetical order to read as follows:

§ 660.302 Definitions.

Active sampling unit means a portion of the groundfish fleet in which an observer coverage plan is being applied.

* * * * *

Vessel manager means a person or group of persons whom the vessel owner has given authority to oversee all or a portion of groundfish fishing activities aboard the vessel.

3. In § 660.306, paragraph (y) is added to read as follows:

§ 660.306 Prohibitions.

* * * * *

(y) *Groundfish observer program.* (1) Forcibly assault, resist, oppose, impede, intimidate, harass, sexually harass, bribe, or interfere with an observer.

(2) Interfere with or bias the sampling procedure employed by an observer, including either mechanically or physically sorting or discarding catch before sampling.

(3) Tamper with, destroy, or discardan observer's collected samples, equipment, records, photographic film, papers, or personal effects without the express consent of the observer.

(4) Harass an observer by conduct that:

(i) Has sexual connotations,

(ii) Has the purpose or effect of interfering with the observer's work performance, and/or

(iii) Otherwise creates an intimidating, hostile, or offensive environment. In determining whether conduct constitutes harassment, the totality of the circumstances, including the nature of the conduct and the context in which it occurred, will be considered. The determination of the legality of a particular action will be made from the facts on a case-by-case basis.

(5) Fish for, land, or process fishwithout observer coverage when a vessel is required to carry an observer under § 660.360(c).

(6) Require, pressure, coerce, orthreaten an observer to perform duties normally performed by crew members, including, but not limited to, cooking, washing dishes, standing watch, vessel maintenance, assisting with the setting or retrieval of gear, or any duties associated with the processing of fish, from sorting the catch to the storage of the finished product.

(7) Fail to provide departure or cease fishing reports specified at §660.360(c)(2).

(8) Fail to meet the vessel responsibilities specified at §660.360(d).

4. Section 660.360 is added to subpart G to read as follows:

§ 660.360 Groundfish observer program.

(a) *General*. Vessel owners, operators, and managers are jointly and severally responsible for their vessel's compliance with this section.

(b) *Purpose*. The purpose of the Groundfish Observer Program is to allow observers to collect fisheries data deemed by the Northwest Regional Administrator, NMFS, to be necessary and appropriate for management, compliance monitoring, and research in the groundfish fisheries and for the conservation of living marine resources and their habitat.

(c) *Observer coverage requirements*—

(1) *At-sea processors*. [Reserved]

(2) *Catcher vessels*. For the purposes of this section, catcher vessels include all vessels, using open access or limited entry gear (including exempted gear types) that take and retain, possess or land groundfish at a processor(s) as defined at § 660.302. When NMFS notifies the vessel owner, operator, permit holder, or the vessel manager of any requirement to carry an observer, the vessel may not take and retain, possess, or land any groundfish without carrying an observer.

(i) *Notice of departure—Basic rule*. At least 24 hours (but not more than 36 hours) before departing on a fishing trip, a vessel that has been notified by NMFS that it is required to carry an observer, or that is operating in an active sampling unit, must notify NMFS (or its designated agent) of the vessel's intended time of departure. Notice will be given in a form to be specified by NMFS.

(A) *Optional notice—Weather delays*. A vessel that anticipates a delayed departure due to weather or sea conditions may advise NMFS of the anticipated delay when providing the basic notice described in paragraph (c)(2)(i) of this section. If departure is delayed beyond 36 hours from the time the original notice is given, the vessel must provide an additional notice of departure not less than 4 hours prior to departure, in order to enable NMFS to place an observer.

(B) *Optional notice—Back-to-back fishing trips*. A vessel that intends to make back-to-back fishing trips (i.e., trips with less than 24 hours between offloading from one trip and beginning another), may provide the basic notice described in paragraph (c)(2)(i)) of this section for both trips, prior to making the first trip. A vessel that has given such notice is not required to give additional notice of the second trip.

(ii) *Cease fishing report*. Not more than 24 hours after ceasing the taking and retaining of groundfish with limited entry or open access gear in order to leave the fishery management area or to fish for species not managed under the Pacific Coast Groundfish Fishery Management Plan, the owner, operator, or vessel manager of each vessel that is required to carry an observer or that is operating in a segment of the fleet that NMFS has identified as an active sampling unit must provide NMFS or its designated agent with notification as specified by NMFS.

(3) *Vessels engaged in recreational fishing*. [Reserved]

(4) *Waiver*. The Northwest Regional Administrator may provide written notification to the vessel owner stating that a determination has been made to temporarily waive coverage requirements because of circumstances that are deemed to be beyond the vessel's control.

(d) *Vessel responsibilities*. An operator of a vessel required to carry one or more observer(s) must provide:

(1) *Accommodations and food*. Provide accommodations and food that are:

(i) *At-sea processors*. [Reserved]

(ii) *Catcher vessels*. Equivalent to those provided to the crew.

(2) *Safe conditions*. Maintain safe conditions on the vessel for the protection of observer(s) including adherence to all U.S. Coast Guard and other applicable rules, regulations, or statutes pertaining to safe operation of the vessel, and provisions at §§ 600.725 and 600.746 of this chapter.

(3) *Observer communications*. Facilitate observer communications by:

(i) *Observer use of equipment*. Allowing observer(s) to use the vessel's communication equipment and personnel, on request, for the entry, transmission, and receipt of work-related messages, at no cost to the observer(s) or the United States or designated agent.

(ii) *Communication equipment requirements for at-sea processing vessels*. [Reserved]

(4) *Vessel position*. Allow observer(s) access to, and the use of, the vessel's navigation equipment and personnel, on request, to determine the vessel's position.

(5) *Access*. Allow observer(s) free and unobstructed access to the vessel's bridge, trawl or working decks, holding bins, processing areas, freezer spaces, weight scales, cargo holds, and any other space that may be used to hold, process, weigh, or store fish or fish products at any time.

(6) *Prior notification*. Notify observer(s) at least 15 minutes before fish are brought on board, or fish and fish products are transferred from the vessel, to allow sampling the catch or observing the transfer, unless the observer specifically requests not to be notified.

(7) *Records*. Allow observer(s) to inspect and copy any state or Federal logbook maintained voluntarily or as required by regulation.

(8) *Assistance*. Provide all other reasonable assistance to enable observer(s) to carry out their duties, including, but not limited to:

(i) Measuring decks, codends, and holding bins.

(ii) Providing the observer(s) with asafe work area.

(iii) Collecting bycatch when requested by the observer(s).

(iv) Collecting and carrying baskets offish when requested by the observer(s).

(v) Allowing the observer(s) to collect biological data and samples.

(vi) Providing adequate space for storage of biological samples.

(9) *At-sea transfers to or from processing vessels*. [Reserved]

(e) *Procurement of observers services by at-sea processing vessels*. [Reserved]

(f) *Certification of observers in the at-sea processing vessels*. [Reserved]

(g) *Certification of observer contractors for at-sea processing vessels*. [Reserved]

(h) *Suspension and decertification process for observers and observer contractors in the at-sea processing vessels*. [Reserved]

(i) *Release of observer data in the at-sea processing vessels*. [Reserved]

(j) *Sample station and operational requirements*—(1) *Observer sampling station*. This paragraph contains the requirements for observer sampling stations. The vessel owner must provide an observer sampling station that complies with this section so that the observer can carry out required duties.

(i) *Accessibility*. The observer sampling station must be available to the observer at all times.

(ii) *Location*. The observer sampling station must be located within 4 m of the location from which the observer samples unsorted catch. Unobstructed passage must be provided between the observer sampling station and the location where the observer collects sample catch.

(iii) *Minimum work space aboard at-sea processing vessels*. [Reserved]

(iv) *Table aboard at-sea processing vessels*. [Reserved]

(v) *Scale hanger aboard at-sea processing vessels*. [Reserved]

(vi) *Diverter board aboard at-sea processing vessels*. [Reserved]

(vii) *Other requirements for at-sea processing vessels*. [Reserved]

(2) *Requirements for bins used to make volumetric estimates on at-sea processing vessels*. [Reserved]

(3) *Operational requirements for at-sea processing vessels*. [Reserved]

[FR Doc. 01–10150 Filed 4–23–01; 8:45 am]

BILLING CODE 3510–22–S

Appendix P: 50 CFR Part 600 Observer Health and Safety Regulations

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 600

[Docket No. 970829214–8090–02; I.D. 082097B]

RIN 0648–AJ76

Magnuson-Stevens Fishery Conservation and Management Act Provisions; Observer Health and Safety

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Final rule.

SUMMARY: NMFS amends the regulations that pertain to fishery observers and the vessels that carry them. This regulatory amendment implements measures to ensure the adequacy and safety of fishing vessels that carry observers. Owners and operators of fishing vessels that carry observers are required to comply with guidelines, regulations, and conditions in order to ensure that their vessels are adequate and safe for the purposes of carrying an observer and allowing normal observer functions.
DATES: Effective June 17, 1998.
ADDRESSES: Copies of the Regulatory Impact Review prepared for this action may be obtained from NMFS, SF3, 1315 East-West Highway, Silver Spring, MD 20910, Attn: William J. Bellows.
FOR FURTHER INFORMATION CONTACT:
William J. Bellows, 301–713–2341.

SUPPLEMENTARY INFORMATION:

Background

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), as amended (16 U.S.C. 1801 *et seq.*), the Marine Mammal Protection Act, as amended (MMPA; 16 U.S.C. 1361 *et seq.*), and the Atlantic Tunas Convention Act, as amended (ATCA; 16 U.S.C. 971 *et seq.*) authorize the Secretary of Commerce (Secretary) to station observers aboard commercial fishing vessels to collect scientific data required for fishery and protected species conservation and management, to monitor incidental mortality and serious injury to marine mammals and to other species listed under the Endangered Species Act (ESA), and to monitor compliance with existing Federal regulations. In addition, pursuant to the South Pacific Tuna Act of 1988 (16 U.S.C. 973 *et seq.*) observers may be required in the South Pacific Tuna Fishery.

The Magnuson-Stevens Act directs that—

...the Secretary shall promulgate regulations, after notice and opportunity for public comment, for fishing vessels that carry observers. The regulations shall include guidelines for determining—

(1) when a vessel is not required to carry an observer on board because the facilities of such vessel for the quartering of an observer, or for carrying out observer functions, are so inadequate or unsafe that the health or safety of the observer or the safe operation of the vessel would be jeopardized; and

(2) actions which vessel owners or operators may reasonably be required to take to render such facilities adequate and safe.

A proposed rule to implement the required measures was published in the **Federal Register** on September 22, 1997 (62 FR 49463), and invited public comment through October 22, 1997. Several comments were received late in the comment period requesting that the comment period be extended. NMFS extended the comment period 30 days (62 FR 55774, October 28, 1997).

Eleven letters of comment were received concerning the proposed rule. Of these 11, eight expressed opposition to the rule or to specific provisions in the rule, and one letter was signed by eight individuals who represented different industry organizations. Two letters expressed strong support for the rule, one of which was from an observer organization with approximately 200 members. One letter expressed neither opposition nor support but listed many problems that observers face on the job.

Comment 1: The publication of the rule was inadequately advertised/ announced. It was not on any of the following notice mediums: NMFS bulletin boards, NMFS press release, NMFS homepage, or Alaska Region homepage. The commenter requested an extension of the 30-day comment period.

Response: The proposed rule was published in the **Federal Register** on September 22, 1997 (62 FR 49463). The comment period was extended for 30 days and was announced by publication in the **Federal Register** on October 28, 1997 (62 FR 55774). In addition to the October 28 publication of the extension of the comment period, both the proposed rule and the extension of the comment period were posted on the NMFS homepage and on the Alaska Region homepage during the extended comment period.

Comment 2: The 30-day extension of the comment period is grossly inadequate.

Response: NMFS disagrees. By extending the public comment period by an additional 30 days, NMFS doubled the length of the original comment period. NMFS believes that a 60-day public comment period is adequate.

Comment 3: Observers are not qualified to make a judgement regarding vessel safety.

Response: It is true that observers do not receive the same vessel safety examination training that U.S. Coast Guard (USCG) personnel do. However, NMFS observers are provided training that addresses vessel safety. For example, in the North Pacific observer training, observers are taught to look for obvious areas of non-compliance that may jeopardize their safety. In addition to viewing several safety videos, the observers are shown a set of "safety tour" slides in which they are asked to look for items on a safety check list. Section 600.746(c)(3) has been added to the rule; this section encourages the observer to check major safety items (as identified by the USCG) and to briefly check the vessel's major spaces for especially hazardous conditions. The intent of this rule is not to empower an observer as a USCG enforcement official. Its purpose is to encourage an observer to check the major safety items identified in § 600.746(c)(3); if these items are absent or unserviceable, the rule empowers the observer not to sail with the vessel until those deficiencies are corrected. The observer's pre-trip safety check will be made in accordance with published USCG guidance on some of the most important items that would be required in the event of an at-sea emergency.

Comment 4: The rule's evaluation that there will be no significant impact on a substantial number of small entities is wrong. If an observer refuses to board a vessel that is safe in accordance with USCG standards, the vessel could be delayed in departing long enough to miss an important part of a short season, resulting in significant lost opportunity to fish. The observer's refusal could be the result of poor judgement, lack of expertise or training, or vindictiveness.

Response: NMFS has added language to the rule in § 600.746(c)(3) that is intended to minimize, if not eliminate, the possibility of an observer making a decision, for whatever reason, regarding a safe

vessel that would delay its beginning legal fishing at the optimum time. The above-mentioned section was added to the regulations in order to give the observer detailed guidance regarding the pre-trip safety check. In addition, this document makes it clear that the observer's safety check is to confirm that the USCG safety decal is current and to spot-check other safety items by conducting a brief walk through the vessel's major spaces to check for obviously hazardous conditions. NMFS believes that the training observers now receive is adequate to enable an observer to conduct the pre-trip safety check as discussed in the response to comment 3.

Comment 5: There are no provisions for redress and appeal in the event that a vessel is unnecessarily detained or impacted.

Response: There are no specific procedures for redress or appeal in these regulations. It would be redundant to include those legal procedures here because they are available to anyone who considers that he or she has experienced wrongful negative impact of any regulations. As is suggested in the response to comment 17, when a vessel operator disputes the observer's decision and is unable to reach a resolution, the vessel operator should call the USCG and request reexamination of the issue in dispute.

Comment 6: If the regulations were approved in the absence of USCG regulations, they would be inadequate.

Response: They are not being approved in the absence of USCG regulations. The intent of this rule is to build upon the USCG and other safety regulations. The regulations intend to insure the safety of observers at sea without duplicating USCG regulations, which are designed to insure the safety of all persons on board fishing vessels.

Comment 7: All vessels carrying observers are required to have a current safety decal; consequently, there is no basis for an observer refusing to board a vessel.

Response: If the decal is valid (current) and if no safety equipment has been lost, damaged, or is otherwise unserviceable, there should be no safety-related reasons for an observer to refuse boarding. If, on the other hand, the decal is current, but safety equipment is missing or unserviceable, the observer is authorized not to board the vessel.

Comment 8: The style of referring to other sections of the CFR is difficult to read and understand. Furthermore, some of the sections cited have not been written.

Response: This rule cites other sections of the CFR rather than duplicating those sections in order to make the regulations published in the **Federal Register** as concise as possible. NMFS wants the regulations to refer to the most recent versions of the regulations cited. If other agencies' regulations were repeated in NMFS' regulations, it would be nearly impossible for NMFS to keep the regulations current. By citing the other agencies' regulations, the reference is always to the most recently amended regulation. All cited sections have been written and published before they are incorporated into the CFR except for citations to the rule being enacted through this action. The regulatory text for this rule follows after this preamble. Some changes may have been too recent to appear in the CFR dated October 1996, which was the last-published CFR at the time that the proposed rule was published.

Comment 9: USCG no longer performs no-cost inspections of processor vessels.

Response: The commenter is correct. Processing vessels examined by private organizations comprise the only category of fishing vessels that pays to have inspections done. These for-fee inspections are in lieu of USCG dockside examinations but do not preclude at-sea examinations by USCG. The inspections of processing vessels are required whether observer safety rules are in effect or not.

Comment 10: This rulemaking is premature; "neither the industry nor NMFS is ready at this time to begin discussions on such rules. Before that discussion can begin, NMFS first needs to develop appropriate rules regarding onboard observers in all the other fisheries in which they have been deemed necessary."

Response: This rule is required by the Magnuson-Stevens Act.

Comment 11: It is unrealistically generous to require that accommodations be equivalent to those of the vessel's officers. Observers do not warrant treatment as officers.

Response: This rule requires nothing specific regarding accommodations for observers. It merely refers to regulations already in place.

Comment 12: Under the regulations that would be put in place by this rule, if all vessels were required to carry observers, all vessels would have to undergo safety inspections. This would mean the end of uninspected fishing vessels.

Response: Under the assumptions made by the commenter, it is true that if all vessels were required to carry observers, all of them would have to be examined. At the present time, however, not all vessels are required to carry observers. NMFS wants fishing vessels carrying observers to fish safely, and undergoing USCG safety examinations promotes safety.

Comment 13: What is the authority under which regional requirements governing observer accommodations might be developed? It is possible that these regional requirements could have unintended effects. For example, if the regional requirement deals with an issue that is judged subjectively, such as the adequacy of accommodations or food, the observer in applying that subjective judgement could keep a safe vessel from fishing.

Response: The authorities under which regional requirements are developed are the Magnuson-Stevens Act, the Marine Mammal Protection Act, and the ESA. The addition of § 600.746(c)(3) to the rule should eliminate the problem of subjective judgement in conducting the vessel's pre-trip safety check. It is not the intent of this rule to develop regional requirements.

Comment 14: If a vessel has a valid USCG safety decal, there should be no question concerning the vessel's safety. To then have an observer, who has the authority to refuse to board the vessel because of a safety deficiency, is double jeopardy.

Response: If a vessel has passed a USCG dock-side safety examination, the regulations indicate that such vessel would be considered safe with respect to the USCG regulations. However, it is possible that some requirements with which the vessel was in compliance at the time of the USCG safety examination may not be met at the time of boarding by an observer for a specific trip. NMFS has added language at § 600.746(c)(3) that encourages the observer to examine some of the most important items that would be required in the case of an emergency at sea. This approach is consistent with that applied by USCG in recognizing that changes in vessel safety may occur between the time when a USCG safety decal is issued and the beginning of subsequent fishing. NMFS notes that this rule gives an observer authority not to board an unsafe or inadequate vessel. If such a vessel is operating in a fishery with mandatory observer coverage, the result of the observer's refusing to board might be that the vessel would not be authorized to conduct fishing.

Comment 15: This rule cites other regulations already in place, which suggests that regulations to effect safety are already in place. That being the case, this rule will not change anything.

Response: This rule applies safety standards to all fisheries, including those for which no other observer regulations are in place. In fisheries with mandatory observer programs in place now, and for those in which mandatory programs may be established, this rule makes it a violation to fish without an observer aboard. This rule also requires vessels to submit to an otherwise voluntary inspection program to provide evidence of compliance with safety standards.

Comment 16: This rule is an attempt to exceed the authority conveyed by the Magnuson-Stevens Act in that it goes beyond USCG regulations by authorizing an observer to refuse to board an unsafe vessel, thereby keeping the vessel from fishing legally. It goes beyond what is necessary to provide a safe environment for an observer, and it gives an observer authority that Congress gave to USCG.

Response: NMFS believes that the rule does not go beyond what is required to provide a safe environment for observers and for other persons aboard fishing vessels. The intent of the rule is not to empower an observer with USCG enforcement official status; its intent is to provide a safe vessel for an assigned observer. The NMFS rule does not encroach on USCG authority to terminate a voyage. Rather, it conditions a vessel's ability to fish safely by requiring compliance with existing regulations enforced by the USCG. The authority to regulate fishing activities properly rests with NMFS.

Comment 17: If NMFS wants to require more than vessel-provided personal flotation devices (PFDs) and safety briefings, it should specifically identify the requirements that relate to observer

safety rather than to such other safety concerns as the environment. NMFS should also consider which safety requirements warrant giving observers "the extraordinary authority to prevent a vessel from undertaking a fishing trip."

Response: NMFS is not giving greater significance to some USCG regulations than to others. NMFS is encouraging observers to check for compliance with existing regulations. A safety decal is considered to be evidence of compliance, but if there is other obvious non-compliance, the observer has the option of not boarding the vessel. If the vessel operator disputes the observer's decision, which should be based upon published USCG guidance on some of the most important items that would be required in the event of an at-sea emergency, and no resolution is reached, the vessel operator should call the USCG to request reexamination of the issue in dispute. The addition of § 600.746(c)(3) clarifies which items the observer should check at the time of boarding. The observer's pre-trip safety check will be made in accordance with published Coast Guard Guidance on some of the most important items that would be required in the event of an at-sea emergency. NMFS recognizes that, in some circumstances, an observer may raise a safety question that requires a vessel to wait for a USCG boarding before fishing. It is true that this could result in a loss of fishing days. In structuring the rule this way, NMFS had to weigh the impacts of this approach versus the impacts of alternative approaches. Just as there is a potential for a vindictive observer declining to board and thereby delaying a vessel's departure, other approaches would have raised the possibility of an observer being coerced into boarding a vessel that he or she believes is unsafe. Given the safety risks at issue and the probability that most safety violations will be easily remedied, e.g., replacing PFDs, NMFS determined that placing the presumptions in the selected manner was preferable. Whenever possible, vessel owners/ operators are encouraged to arrange for the observer to make the pre-trip safety check in advance of the beginning of the planned fishing trip. In that way, there would be time to correct problems without delaying the trip's departure time.

Comment 18: There are alternatives that would accomplish NMFS' objectives that were not considered by NMFS. One alternative is to provide an automatic waiver for those situations in which an observer refused to board a vessel for safety reasons. The waiver would be valid until the vessel had undergone a USCG inspection either at sea or in port. Alternative two would be to require that the safety determination be made by a NMFS enforcement agent who had completed the USCG training program for vessel safety inspections. Alternative three would be to determine which classes of vessels have consistently failed to provide safe working conditions for observers. Only those classes of vessels would be required to comply with the rule. Vessels with proven safety records would be exempt from the provisions of this rule.

Response: Alternative one would void the intent of the rule. It would not make the vessel safe for the observer on the fishing trip that the observer was assigned to observe. Furthermore, it could provide an opportunity for vessel operators to avoid taking observers by incurring safety violations, such as no PFD for the observer. By authorizing an observer to refuse to board an unsafe vessel and by making it illegal to fish without an observer in a mandatory observer fishery, there is a strong incentive for the vessel to meet all USCG safety regulations. Alternative two was considered and rejected. It is equally possible that a NMFS enforcement agent, like an observer, would discover a safety violation that would delay a vessel's fishing trip. This option would also create the risk of an observer having to board a vessel that he or she believes is unsafe. In addition, from a practical standpoint, the current work load for NMFS enforcement agents makes it impossible for them to undertake this responsibility and continue to perform other enforcement functions/duties. Alternative three is not feasible because vessel safety is an individual vessel issue not one that can be addressed by classes of vessels.

Comment 19: The rule does not analyze measures taken by regions.

Response: It is not the intent of this rule to analyze measures taken by regions. That analysis is done at the time those measures are developed and proposed in the rulemaking process.

Comment 20: One commenter believes that, should an observer refuse to board a vessel because of safety deficiencies, there could be legal implications beyond the simple issue of the USCG safety requirement and the vessel's fishing. "After an observer has determined a vessel to be unsafe, a crew

member injures themself [sic] in the factory. Considering the Jones Act, the lawyers would have a field day."

Response: NMFS believes this comment refers to the possible use of an observer's safety determinations as evidence in a law suit. As stated in the responses to comments 3 and 16, this rule is not intended to give observers the authority to make actual determinations as to a vessel's compliance with USCG regulations. Rather, it simply requires that a vessel, if its safety has been called into question, rectify the shortcoming or submit to a new USCG safety examination or inspection. If anything, this rule is likely to reduce the number of negligence claims because vessels with questionable safety issues will correct them or be reexamined by USCG before fishing.

Comment 21: The USCG should be consulted.

Response: The USCG was involved at every stage of development of this rule.

Comment 22: One commenter raised specific issues about an observer who was terminated and who subsequently filed suit.

Response: Because the case is before the court, it would be inappropriate for NMFS to respond at this time.

Changes From the Proposed Rule

Four changes were made from the proposed rule. One was made in response to comments: A provision was added at § 600.746(c)(3) to provide guidance on the scope of the observer's pre-trip safety check.

Another change was made to clarify that USCG performs either an inspection or an examination: The words "examination or inspection" replaced "inspection" in §§ 600.725(p), 600.746(c)(1), and 600.746(d)(1) so that it is clear that either an examination or an inspection can be performed.

The word "Examination" was inserted in § 600.746(c)(1) in order to more clearly identify the Commercial Fishing Vessel Safety Examination decal.

The word "examine" replaced "inspect" in § 600.746(c)(2) in order to avoid confusion with USCG inspection.

The observer's pre-trip safety check of a vessel that displays a current Commercial Fishing Vessel Safety Examination decal will normally consist of no more than a spot check of the equipment identified in § 600.746(c)(3), i.e., PFDs/immersion suits; ring buoys; distress signals; fire extinguishing equipment; emergency position indicating radio beacon, when required; survival craft, when required; and a walk through major spaces. This walkthrough is not intended to broaden the scope of the safety check. The safety check should be done expeditiously because the decal indicates that the vessel has already undergone an extensive dockside inspection.

Classification

At the proposed rule stage, NMFS certified to the Assistant General Counsel for Legislation and Regulation, Department of Commerce and to the Chief Counsel for Advocacy, Small Business Administration that this action would not result in a significant economic impact on a substantial number of small entities. Comments received on the proposed rule suggested that small entities might experience a significant economic impact as a result of the rule. Based on this new information, NMFS decided to prepare a Final Regulatory Flexibility Analysis (FRFA). The FRFA concludes that the rule's authorization for an observer to refuse to board a vessel that the observer believes to be unsafe and the rule's requirement that a vessel required to carry an observer cannot legally fish without the observer make it possible that implementation of this rule could delay a vessel's departure for a fishing trip. Because of variations in the structures of different fisheries' mandatory observer programs and in the structures of the different fishery management regimes, the fact that an observer refused to board would not necessarily mean that the vessel would lose fishing time as might be the case in those fisheries where vessels are allowed a limited number of days fishing per year. It is not possible to estimate accurately how many, if any, vessels would lose days at

sea as a result of this rule. Therefore, there is at least a theoretical possibility that 20 percent of the affected small entities could experience a significant economic impact.

In addition to the preferred alternative, which is the alternative that is implemented by this rule, NMFS considered several other alternatives. One of them would have been to take no action. Under this approach, vessels that carry observers would be required to comply with the same safety standards that would be applicable under the preferred alternative, but there would be no guidance to interested parties as to how to conduct a pre-trip safety check nor would there be any means by which an observer could quickly ascertain whether the vessel was in compliance with applicable USCG regulations. If the agency were to adopt the no-action alternative, the Congressional mandate in the Magnuson-Stevens Act would not be effected. In addition, there would be continued risk of unsafe conditions on board vessels to which observers were assigned.

Another alternative would have prescribed new national standards for a wide range of safety and accommodations issues. Basic standards for determining a vessel's safety and adequacy would be based on USCG safety requirements and NMFS regional observer requirements as is the case in the first alternative. In addition to those basic USCG standards, this alternative would result in new regulations addressing a wide range of accommodation issues, such as quality of food, which, if not met, would authorize an observer not to board a fishing vessel. The observer would be authorized to make the pre-trip safety check to determine whether or not he/ she would board the vessel. In mandatory observer programs, a fishing vessel would not be permitted to fish legally without an observer. This alternative is not the preferred alternative because of the degree to which an observer would be authorized to make subjective, qualitative determinations. Furthermore, because of the variability of working conditions on fishing vessels, some vessels could not reasonably or economically meet the expectations of all observers. Therefore, the risk of this alternative resulting in delays of fishing trips is greater than that of the preferred alternative.

The last alternative that NMFS considered would have prescribed basic standards for determining safety and adequacy as described in the preferred alternative, but either the National Marine Fisheries Service or an authorized observer contractor would have been authorized to make the pretrip safety check to determine whether or not the observer would board the vessel. In mandatory observer programs, a fishing vessel would not be permitted to fish legally without an observer. This alternative would have used the same evaluation criteria (USCG dockside safety examination, pre-trip safety check, presence of a current Commercial Fishing Vessel Safety Decal, etc.) as the preferred alternative but would give NMFS and/or an authorized observer contractor the authority to decide whether a vessel is safe and adequate. The rationale for this approach is that it would avoid putting the observer into a situation where vessel owner, operator, and crew might exert pressure to coerce the observer to declare the vessel safe despite conditions that the observer believed to be unsafe. It would also avoid the potential for a "vindictive" observer to abuse discretion in making safety checks. The benefit of having NMFS or an authorized observer contractor make the safety and adequacy decision is that it would avoid putting the additional pressure on an observer of potentially having to tell a captain and crew with whom he/she would be spending time at sea that a fishing trip would be delayed. However, this alternative would also have the potential to delay a fishing voyage pending safety resolution. It is just as possible that a NMFS employee or observer contractor would discover safety issues in need of attention as an observer would. In addition, under this alternative, an observer who believes a vessel to be unsafe may be instructed to board because NMFS or the observer contractor believes the vessel to be safe. There would also be costs to NMFS and/ or the observer contractor in the form of having a representative on site each time an observer boarded a vessel. NMFS and/or the observer contractor would also experience the cost of training employees to make the pre-trip safety check. This alternative is not preferred because it would put a third party in a position of judging a vessel's safety and perhaps of forcing an observer aboard an unsafe vessel.

In addition to these alternatives, one commenter suggested two additional alternatives: The first would have provided an automatic waiver for those situations in which an observer refused to board a vessel for safety reasons. The waiver would be valid until the vessel had undergone a USCG inspection either at sea or in port. This alternative would have voided the intent of the rule. It would not make the vessel safe for the observer on the fishing trip that the observer was assigned to observe. Furthermore, it could provide an opportunity for vessel operators to avoid taking observers by incurring safety violations, such as no PFD for the observer. The other suggested alternative would be to determine which classes of vessels have consistently failed to provide safe working conditions for observers. Only those classes of vessels would be required to comply with the rule. Vessels with proven safety records would be exempt from the provisions of this rule. This approach is not feasible because vessel safety is an individual vessel issue not one that can be addressed by classes of vessels.

NMFS tried to mitigate the potential impact of the rule by using objective standards for the observer's pre-trip safety check in the form of the published USCG guidance about the most important items that would be required in the event of an at-sea emergency. This particular alternative was chosen because it seemed to be an appropriate balance between the objectives of increasing observer safety and minimizing the risk of negative economic impact on vessels.

This action has been determined to be not significant for purposes of E.O. 12866.

List of Subjects in 50 CFR Part 600

Administrative practice and procedure, Confidential business information, Fisheries, Fishing, Fishing vessels, Foreign relations, Intergovernmental relations, Penalties, Reporting and recordkeeping requirements, Statistics.

Dated: May 12, 1998.

David L. Evans,

Deputy Assistant Administrator for Fisheries, National Marine Fisheries Service.

For the reasons set forth in the preamble, 50 CFR part 600 is amended as follows:

PART 600—MAGNUSON-STEVENS ACT PROVISIONS

1. The authority citation for 50 CFR part 600 continues to read as follows:

Authority: 5 U.S.C. 561 and 16 U.S.C. 1801 *et seq.*

2. Section 600.725 is amended by redesignating paragraph (p) as paragraph (t), adding paragraphs (p), (q), (r), (s), and (u), and revising newly redesignated paragraph (t) to read as follows:

§ 600.725 General prohibitions.

* * * * *

(p) Fail to submit to a USCG safety examination when required by NMFS pursuant to § 600.746.

(q) Fail to display a Commercial Fishing Vessel Safety Examination decal or a valid certificate of compliance or inspection pursuant to § 600.746.

(r) Fail to provide to an observer, a NMFS employee, or a designated observer provider information that has been requested pursuant to § 600.746, or fail to allow an observer, a NMFS employee, or a designated observer provider to inspect any item described at § 600.746.

(s) Fish without an observer when the vessel is required to carry an observer.

(t) Assault, oppose, impede,intimidate, or interfere with a NMFS-approved observer aboard a vessel.

(u) Prohibit or bar by comm. And ,impediment, threat, coercion, or refusal of reasonable assistance, an observer from conducting his or her duties aboard a vessel.

3. In subpart H, §600.746 is added to read as follows:

§ 600.746 Observers.

(a) *Applicability*. This section applies to any fishing vessel required to carry an observer as part of a mandatory observer program or carrying an observer as part of a voluntary observer program under the Magnuson-Stevens Act, MMPA (16
U.S.C. 1361 *et seq*.), the ATCA (16
U.S.C. 971 *et seq*.), the South Pacific Tuna Act of 1988 (16 U.S.C. 973 *et seq*.), or any other U.S. law.

(b) *Observer requirement*. An observer is not required to board, or stay aboard, a vessel that is unsafe or inadequate as described in paragraph (c) of this section.

(c) *Inadequate or unsafe vessels*. (1) A vessel is inadequate or unsafe for purposes of carrying an observer and allowing operation of normal observer functions if it does not comply with the applicable regulations regarding observer accommodations (see 50 CFR parts 229, 285, 300, 600, 622, 648, 660, 678, and 679) or if it has not passed a USCG safety examination or inspection. A vessel that has passed a USCG safety examination or inspection must display one of the following:

(i) A current Commercial FishingVessel Safety Examination decal, issued within the last 2 years, that certifies compliance with regulations found in 33 CFR, chapter I and 46 CFR, chapter I;

(ii) A certificate of compliance issuedpursuant to 46 CFR 28.710; or

(iii) A valid certificate of inspectionpursuant to 46 U.S.C. 3311.

(2) Upon request by an observer, aNMFS employee, or a designated observer provider, a vessel owner/ operator must provide correct information concerning any item relating to any safety or accommodation requirement prescribed by law or regulation. A vessel owner or operator must also allow an observer, a NMFS employee, or a designated observer provider to visually examine any such item.

(3) *Pre-trip safety check*. Prior to each observed trip, the observer is encouraged to briefly walk through the vessel's major spaces to ensure that no obviously hazardous conditions exist. In addition, the observer is encouraged to spot check the following major items for compliance with applicable USCG regulations:

(i) Personal flotation devices/immersion suits;

(ii) Ring buoys;

(iii) Distress signals;

(iv) Fire extinguishing equipment;

(v) Emergency position indicatingradio beacon (EPIRB), when required; and

(vi) Survival craft, when required.

(d) *Corrective measures*. If a vessel is inadequate or unsafe for purposes of carrying an observer and allowing operation of normal observer functions,

NMFS may require the vessel owner or operator either to:

(1) Submit to and pass a USCG safetyexamination or inspection; or

(2) Correct the deficiency that isrendering the vessel inadequate or unsafe (e.g., if the vessel is missing one personal flotation device, the owner or operator could be required to obtain an additional one), before the vessel is boarded by the observer.

(e) *Timing*. The requirements of this section apply both at the time of the observer's boarding, at all times the observer is aboard, and at the time the observer is disembarking from the vessel.

(f) *Effect of inadequate or unsafe status*. A vessel that would otherwise be required to carry an observer, but is inadequate or unsafe for purposes of carrying an observer and for allowing operation of normal observer functions, is prohibited from fishing without observer coverage.

[FR Doc. 98–13131 Filed 5–15–98; 8:45 am]
BILLING CODE 3510–22–F

Appendix Q: Vessel Selection in 2004

Limited Entry Groundfish Trawlers:

- Selection based on 2-Month Cumulative Trip Limit periods.
- All trips taken during selected 2-months are covered by an Observer.
- Between May 1, 2004 and December 31, 2004, all Groundfish Trawlers will be selected.

Limited Entry Fixed Gear – Sablefish Endorsed

- Selection based on sablefish tier quota(s).
- Sablefish season is April 1 – October 31.
- All trips that land fish on the sablefish tier quota are covered by an Observer.
- Approximately ¼ of total sablefish endorsed permits will be covered during 2004 season.

Limited Entry Fixed Gear – Nonsablefish Endorsed

- Selection based on 2-Month Cumulative Trip Limit periods.
- All trips taken during selected 2-months are covered by an Observer.
- Approximately ½ of Nonsablefish Endorsed vessels will be covered in 2004.

Open Access – California

- Selection based on 2-Month Cumulative Trip Limit periods
- All trips taken during selected 2-months may be covered by an Observer.
- Open access vessels will be selected once between January 1, 2004 and June 30, 2004 and once between July 1, 2004 and December 31, 2004.

Open Access – Oregon and Washington

- At time of printing, Oregon and Washington legislation had not yet passed to allow the coverage of open access vessels.

Appendix R: Radio Communications

The radios that you will encounter most often are VHF-FM (Very High Frequency Modulation), used for short-range vessel-to-vessel and vessel-to-shore communication, and HF-SSB (High Frequency-Single Side Band), used for communication when the stations are out of VHF range with each other. Both types offer certain special advantages, and each requires a specific operating procedure. The use of radio communication equipment requires a licensed operator. If your vessel has given you permission to use the radio, you must follow the FCC rules for calling and speaking on the type of radio (VHF or SSB) you use. Ask first how to operate the radio and use these pages as a guide for calling. Be aware that obstructing others' transmissions with your call (by conversing for too long), using profanities or making false distress calls can cost the permit holder and/or you a heavy fine and/or prison sentence.

VHF-FM Radios

In the United States, the VHF Band is broken up into 71 channels, with a frequency range of from 156.000 to 163.000 MHz, including six WX (Weather) channels. By law, all operating VHF stations are required to have at least three of these channels: channel 6, channel 16, and at least one other working channel.

Channel 6 (156.300 MHz) is the Intership Safety Channel, used for intership safety purposes, search- and rescue (SAR) communications with ships and aircraft of the U.S. Coast Guard, and vessel movement reporting within ports and inland waterways. This channel must not be used for non-safety communications.

Channel 16 (156.800 MHz) is the International Distress, Safety, and Calling Channel (Intership and Shipto-Coast). This channel must be monitored at all times the station is in operation (except when actually communicating on another channel). This channel is also monitored by the U.S. Coast Guard, Public Coastal Stations, and many Limited Coastal Stations. Calls to vessels are normally initiated on this channel. Then, except in an emergency, you must switch to a working channel. It is against FCC regulations to conduct business on this channel. In addition, vessels calling must use their assigned call sign at the beginning and end of each transmission.

Channel 22A (157.100 MHz) is the U.S. Coast Guard Liaison Channel. This channel is used for communications with U.S. Coast Guard ships, aircraft, and coastal stations after first establishing contact on channel 16. Navigational warnings and, where not available on WX channels, Marine Weather forecasts are also broadcast on this frequency.

Channels 24. 25. 26. 27 and 28 (also 84. 85. 86 and 87) are the Public Correspondence channels (ship-to-coast). These are available to all vessels to communicate with Public Coastal stations (Marine Operator).

Channels 26 and 28 are the primary public correspondence channels.

Channels 1. 3. 5. 12. 13. 14. 15. 17. 65. 66. 73. 74. 77. 81. 82 and 83 are channels with special designations (port traffic communications, U.S. government communications, locks and bridges, environmental, etc.), and their use close to shore or to ports should be minimized..

Channels 7. 8. 9. 10. 11. 18. 19. 67. 68. 69. 70. 71. 72. 78. 79. 80 and 88 are commercial and non-commercial working channels that are available for conducting business. The abbreviated format (no call signs) is acceptable on these frequencies. It should be noted that some of these channels may be locally restricted (off the Washington Coast, for example, channel 11 is Tofino Coast Guard Traffic Control for the entry into Juan deFuca Strait, used for reporting ship locations), in which case their use for business should be avoided.

HF-SSB Radios

To communicate over distances of beyond twenty miles, you will need to use satellite communication or a medium to high frequency radiotelephone referred to as Single Side Band (SSB) radio. The signal is poorer in quality than VHF and susceptible to slight atmospheric shifts. Lower frequencies are used for medium distances and higher frequencies for greater distances. The general rule for single sideband frequency selection is: multiply the frequency in MHz by 100 to obtain the approximate coverage distance in miles. At night however, the ranges of SSB radio wave travel are from 2-3 times greater. Therefore, use a lower frequency at night to cover the same distance.

All ship SSB radiotelephones must be capable of operating on 2182 kHz, the international distress and calling frequency, and at least 2 other frequencies. Numerous channels are available for your use; which ones are available varies from place to place. However, channel 2670 kHz is only used for communicating with the Coast Guard and should not be used for other purposes.

When using SSB radiotelephone, you must observe radio silence on channel 2182 kHz, the emergency channel, for 3 minutes immediately after the hour and the half hour. The purpose of radio silence on the emergency hailing channel is to clear the airwave for weak or distant distress signals. No radio silence is used on the VHF emergency channel: channel 16.

Radio Procedure

In as much as the airwaves are in the public domain, it is the responsibility of the radio station operator to conduct business according to established guidelines and procedures. While on the air, the operator should follow the following format outline:

1) Listen before beginning transmission in order to ensure that you are not interfering with other stations or with emergency radio traffic.
2) Identify your station when calling. On the SSB, a calling station must limit the duration of the hail to not more than 30 seconds. If there is no reply, the hail may be repeated at 2 minute intervals up to a maximum of three times, at which time the calling station must sign off and wait a minimum of 15 minutes before making another attempt. This requirement does not apply in emergency situations.
3) Keep transmissions short and concise, giving the other station a chance to respond, ask questions, or reconfirm an unclear message. A long, complicated message can best be effected in short segments with breaks in between to ensure that the receiving station has copied each portion of the message correctly.
4) Follow correct radio procedure while on the air. The phonetic alphabet should be learned and used spelling unclear words with an extemporaneous phonetic alphabet can lead to misunderstood messages. You should also know and use the radio "punctuation" words ("over", clear", "out", "roger", "words twice", "say again", "standing by", and "break").

Since most radio communication is only one way at a time, these words can be invaluable for signaling your intentions to the receiving station. Make sure to speak directly into the microphone; speaking loudly, slowly, and distinctly—but not shouting—can significantly improve the legibility of radio broadcasts. The use of profanity on the public airwaves is strictly forbidden.

5) Upon completing a transmission, you must sign off by identifying your station and using the words "clear" or "out" (or, if you expect to soon resume contact with the same station, by using the phrase "standing by").

Radios are different from telephones in that they cannot transmit and receive simultaneously. Therefore when you have temporarily finished talking and are ready to listen, say "over," and release the button on your microphone. When the other party is ready to listen they will say "over." At the end of your entire message, say "out" rather than "over." Keep in mind that people on other ships can overhear your conversation, so watch what you say.
Sounds are easily garbled on marine radios so the phonetic alphabet is used when sailors want to spell something. Here are the words that the Coast Guard will recognize as letters:

A – alpha	I - indigo	Q - quebec	Y- yankee
B - bravo	J - juliet	R - romeo	Z - zulu
C - charlie	K - kilo (keeloes)	S - sierra	
D - delta	L - lima (Leema)	T - tango	
E - echo	M - mike	U - uniform	
F - foxtrot	N - november	V - victor	
G - gulf	O - oscar	W - whiskey	
H - hotel	P - papa	X - x-ray	

Every ship and all Coast Guard stations continually listen to the emergency frequencies. Therefore when you want to talk to someone, call on an emergency frequency. As soon as you contact them, arrange to switch to another channel. It is illegal, impolite, unfair, and dangerous to talk on emergency channels. Sometimes atmospheric conditions are such that the emergency frequencies are the only ones that work. At those times you simply cannot communicate via radio except to report emergencies.

Emergency frequencies are:

- FM Channel 16, international distress
- FM Channel 13, for ships to use to avoid collisions. You can contact other ships on 13, but not Coast Guard shore stations.
- AM 2182, international distress (Almost certainly as an observer you will only be using FM frequencies.)
- When you initially contact another station make sure you state what channel you are broadcasting on, since all ships and stations constantly listen to several.
- Speak in normal tones, using normal conversational pauses and emphasis.
- Ensure that your messages are brief and businesslike. No chatter.

- When trying to establish communications repeat the other station's name, and your name, at least twice. A typical message may be as follows:

You: Coast Guard Station San Francisco Coast Guard Station San Francisco; this is the fishing vessel Starry Flounder, Whiskey Tango Zulu four, one, nine, zero; this is the fishing vessel Starry Flounder,
Whiskey Tango Zulu four, one, nine, zero on channel sixteen, over.
***C.G.**: Fishing vessel Starry Flounder this is Coast Guard Station San Francisco shift and answer on channel eleven, out.*
You: Coast Guard Station San Francisco Coast Guard Station San Francisco this is the Starry Flounder on channel eleven, over.
***C.G.**: Fishing vessel Starry Flounder, this is Coast Guard Station Kodiak send your traffic, over.*
You: San Francisco this is the Starry Flounder, I am an observer talking for the captain. A crewman has a
badly crushed arm and needs hospitalization. Can you evacuate the crewman? Over. "
***C.G.:** Vessel Starry Flounder, this is* San Francisco. *Affirmative. What is your current position? Over. "*
You: San Francisco this is the Starry Flounder. Position is fifty-five degrees fifty minutes north, 157 degrees, twenty-four minutes west, over..A-55

Appendix S: Material Safety Data Sheet for DMSO

MATERIAL SAFETY DATA SHEET

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.
959 ROUTE 46 EAST
PARSIPPANY, NEW JERSEY 07054-0624

EMERGENCY CONTACT:
CHEMTREC 1-800-424-9300
INFORMATION CONTACT:
973-257-1100

SUBSTANCE: DIMETHYL SULFOXIDE

TRADE NAMES/SYNONYMS:
SULFINYLBIS(METHANE); METHYL SULFOXIDE; DMSO; DEMESO; DEMASORB; DIMETHYL SULPHOXIDE; DELTAN; DEMAVET; DMS-70; DMS-90; DOLICUR; DOLIGUR; DOMOSO; DROMISOL; HYADUR; INFILTRINA; RIMSO-50; RIMSO-100; C2H6OS; MAT07770; RTECS PV6210000

CHEMICAL FAMILY: sulfoxides

CREATION DATE: Jan 24 1989
REVISION DATE: Mar 19 2003

SECTION 2 COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: DIMETHYL SULFOXIDE
CAS NUMBER: 67-68-5
PERCENTAGE: 100.0

SECTION 3 HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=2 REACTIVITY=0
EMERGENCY OVERVIEW:
CHANGE IN APPEARANCE: hygroscopic
COLOR: colorless
PHYSICAL FORM: liquid
ODOR: garlic odor
MAJOR HEALTH HAZARDS: harmful if inhaled, respiratory tract irritation, skin irritation, eye irritation
PHYSICAL HAZARDS: Combustible liquid and vapor.

POTENTIAL HEALTH EFFECTS:
INHALATION:
SHORT TERM EXPOSURE: irritation, nausea, vomiting, headache, dizziness
LONG TERM EXPOSURE: liver damage

SKIN CONTACT:
SHORT TERM EXPOSURE: irritation, allergic reactions, blisters, rash, itching, nausea, vomiting, diarrhea, chest pain, headache, drowsiness, blood disorders

LONG TERM EXPOSURE: same as effects reported in short term exposure
EYE CONTACT:
SHORT TERM EXPOSURE: irritation, blurred vision
LONG TERM EXPOSURE: same as effects reported in short term exposure
INGESTION:
SHORT TERM EXPOSURE: nausea, vomiting, diarrhea, stomach pain, drowsiness
LONG TERM EXPOSURE: no information on significant adverse effects

SECTION 4 FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

EYE CONTACT: Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

NOTE TO PHYSICIAN: For ingestion, consider gastric lavage and activated charcoal slurry. Consider oxygen.

SECTION 5 FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Moderate fire hazard. Vapor/air mixtures are explosive above flash point. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back.

EXTINGUISHING MEDIA: regular dry chemical, carbon dioxide, water, regular foam, alcohol resistant foam

Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING: Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Do not scatter spilled material with high-pressure water streams. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

FLASH POINT: 192 F (89 C) (CC)
LOWER FLAMMABLE LIMIT: 2.6%
UPPER FLAMMABLE LIMIT: 42%
AUTOIGNITION: 419 F (215 C)

FLAMMABILITY CLASS (OSHA): IIIA

SECTION 6 ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:
Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry.

SECTION 7 HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Keep separated from incompatible substances.

SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:
DIMETHYL SULFOXIDE:
No occupational exposure limits established.

VENTILATION: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode.
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or

other positive-pressure mode.
For Unknown Concentrations or Immediately Dangerous to Life or Health
Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
Any self-contained breathing apparatus with a full facepiece.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid
APPEARANCE: clear
COLOR: colorless

CHANGE IN APPEARANCE: hygroscopic
ODOR: garlic odor
TASTE: bitter taste
MOLECULAR WEIGHT: 78.13
MOLECULAR FORMULA: C2-H6-O-S
BOILING POINT: Not available
FREEZING POINT: 64 F (18 C)
DECOMPOSITION POINT: 372 F (189 C)
VAPOR PRESSURE: 0.37 mmHg @ 20 C
VAPOR DENSITY (air=1): 2.7
SPECIFIC GRAVITY (water=1): 1.1014
WATER SOLUBILITY: miscible
PH: Not available
VOLATILITY: Not available
ODOR THRESHOLD: Not available
EVAPORATION RATE: 4.3 (carbon tetrachloride=1)
VISCOSITY: 1.1 cP @ 27 C
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available
SOLVENT SOLUBILITY:
Soluble: alcohol, ether, acetone, benzene, chloroform

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Keep out of water supplies and sewers.

INCOMPATIBILITIES: combustible materials, acids, metals, oxidizing materials, halogens, metal salts, reducing agents

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: aldehydes, various organic fragments, oxides of sulfur

POLYMERIZATION: Will not polymerize.

SECTION 11 TOXICOLOGICAL INFORMATION

DIMETHYL SULFOXIDE: IRRITATION DATA:
10 mg/24 hour(s) open skin-rabbit mild; 500 mg/24 hour(s) skin-rabbit mild; 100 mg eyes-rabbit; 500 mg/24 hour(s) eyes-rabbit mild
TOXICITY DATA:
1600 mg/m3/4 hour(s) inhalation-rat LC50; >11 gm/kg skin-dog LD50; 14500 mg/kg oral-rat LD50
LOCAL EFFECTS:
Irritant: inhalation, skin, eye
ACUTE TOXICITY LEVEL:
Toxic: inhalation
Slightly Toxic: ingestion
Relatively Non-toxic: dermal absorption
TUMORIGENIC DATA: Available.

MUTAGENIC DATA: Available.
REPRODUCTIVE EFFECTS DATA: Available.
ADDITIONAL DATA: Interactions with drugs may occur.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY DATA:
FISH TOXICITY: 400 ug/L 96 hour(s) LC50 (Mortality) Zebra danio, zebrafish (Brachydanio rerio)

INVERTEBRATE TOXICITY: 96400 ug/L 48 hour(s) LC50 (Mortality) Water flea (Daphnia magna)

ALGAL TOXICITY: 1.3 ug/L 72 hour(s) EC50 (Population Growth) Green algae (Selenastrum capricornutum)

PHYTOTOXICITY: 20000 ug/L 10 hour(s) (Growth) Duckweed (Lemna perpusilla)

OTHER TOXICITY: 1.65 ug/L 96 hour(s) LC50 (Mortality) Frog (Rana temporaria)

FATE AND TRANSPORT:
BIOCONCENTRATION: 1600 ug/L 4 hour(s) BCF (Residue) Guppy (Poecilia reticulata) 1.28 ug/L

SECTION 13 DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

SECTION 14 TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Combustible liquid, n.o.s. (dimethyl sulfoxide)
ID NUMBER: NA1993

HAZARD CLASS OR DIVISION: Combustible liquid
PACKING GROUP: III

CANADIAN TRANSPORTATION OF DANGEROUS GOODS: No classification assigned.

SECTION 15 REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30): Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40): Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):
ACUTE: Yes
CHRONIC: No

FIRE: Yes
REACTIVE: No
SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65): Not regulated.

OSHA PROCESS SAFETY (29CFR1910.119): Not regulated.

STATE REGULATIONS:
California Proposition 65: Not regulated.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: Not determined.

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Not determined.

SECTION 16 OTHER INFORMATION

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Appendix T: Chattilon Flatbed Scale Care and Maintenance

Although useful, the Chattilon scale will only perform if you properly lubricate and maintain it.

Before You Use the Scale
Prior to taking the scale from training, you should familiarize yourself with how to use it. Additionally, you will need to ensure the scale is properly lubricated and tested. Record the serial number and the test results in your logbook.

Lubricating the Scale.
The bars on the bottom of the scale form an "X" shape. The platform floats on the tips of this "X," and there is a flex point where the bars cross. Each of these five points must be liberally lubricated. Generally, the flex points will be lubricated with a thick grease prior to issue. However, if this grease washes off during your deployment, ask the boat's engineer for thick engine grease to lubricate these points. The two bars on the front of the scale, on which the weights slide, also need to be lubricated. You may use a
WD-40 type oil, or the food grade lubricant oil issued as part of your normal observer gear. **Check all lubrication points often**. The weight bars should be oiled daily, and the points on the "X" bars beneath the platform need to be re-greased at least every few days.

Using the Scale
Whenever you are not using the scale, lock the platform in place using the black lever on the right side of the scale. Turn the lever forward to unlock the platform, and back to re-lock the platform.

Checking the Scale for Accuracy and Recalibrating.
Weigh an object on the platform scale prior to using it at sea. Record the weight of this object, and use it periodically to check your scale. If the scale no longer reads the correct weight, you will need to recalibrate the scale. The small, rectangular bar on the upper left of the weight bar has a screw head on the far left hand side, with a nut on the other end. Inside this rectangular bar is a small weight that will move when you turn the screw head. The nut on the other end will also move; this is normal. Put an object of a known weight on the scale and place the weights on the weight bar to show the known weight. If the scale is unbalanced where the known weight appears too light, turn the screw to the left until the scale balances on the correct weight. If the scale is unbalanced where the known weight appears too heavy, turn the screw to the right until the scale balances on the correct weight.

Returning the Scale
Prior to bringing the scale back to NMFS, rinse it with fresh water and let it dry. Remove any rust on the five pivot points on the bottom of the scale, and on the sliding weight bars. Lubricate the scale and transport it to NMFS with the platform in the locked position. Test the scale and record the results in your logbook. If the scale does not test out within the approved NMFS accuracy range, please alert your debriefer when you return for your final debriefing.

Appendix U: Flatfish Species Description Form

SPECIES COMMON NAME: _____

DATE: _____

HAUL NUMBER: _____

FORK LENGTH: _____

A SPECIMEN COLLECTED? Yes No

THE FISH HAS (CIRCLE ONE) - eyes on the right side eyes on the left side

ARE EITHER OF THE PELVIC FINS DIRECTLY ON THE VENTRAL RIDGE?

Yes No

ACCESSORY DORSAL BRANCH (ADB) OF THE LATERAL LINE PRESENT?

Yes No

RELATIVE TO THE THE STANDARD LENGTH, THE ADB LENGTH IS

less than half greater than half

CAN THE EYE BE SEEN FROM THE BLIND SIDE (TOP EYE SOCKET IS EMBEDDED IN THE DORSAL RIDGE)?

Yes No

WHAT IS THE BLIND SIDE COLOR? _____

RELATIVE TO THE LOWER EYE, THE MAXILLARY ENDS

_____ forward of orbit _____below mid-eye

_____ below anterior part of orbit _____ below posterior part of orbit

_____ beyond the orbit

THE PREOPERCULUM SHAPE IS -

rounded angled

ANAL SPINE PRESENT YES NO

THE SHAPE OF THE LATERAL LINE OVER THE PECTORAL FIN IS –

_____ flat **_____ curved slightly**

_____ arched **_____ highly arched**

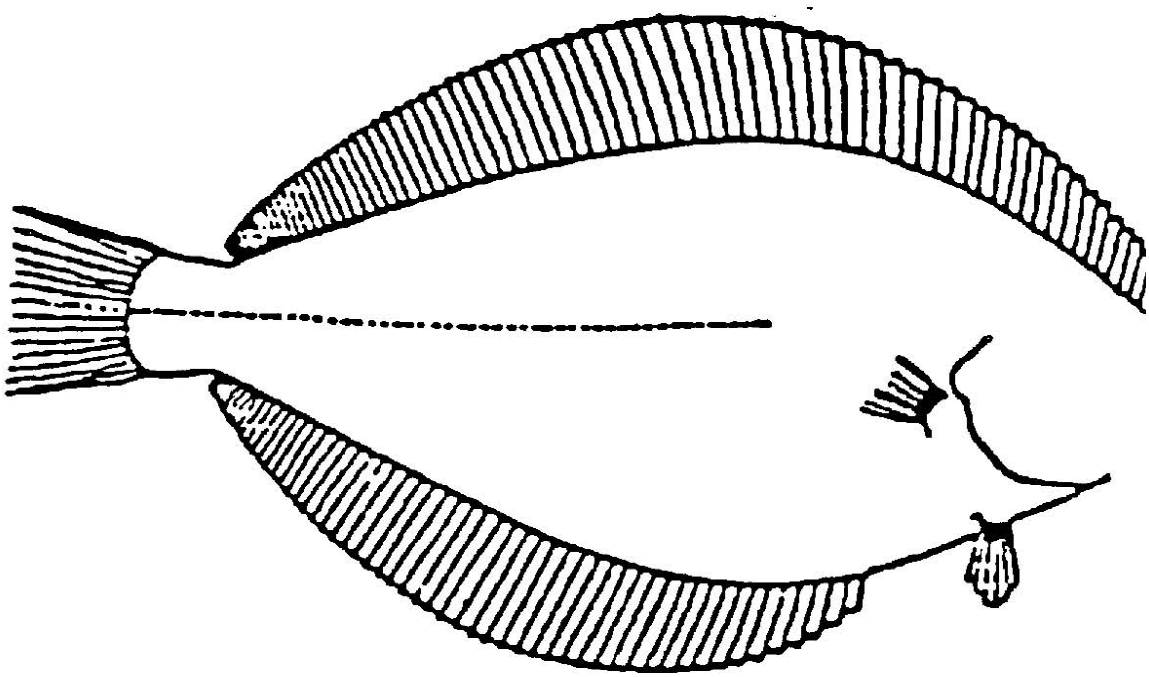
IF THE FLATFISH IS A - BERING FLOUNDER, FLATHEAD SOLE, NORTHERN OR SOUTHERN ROCK SOLE, ARROWTOOTH OR KAMCHATKA FLOUNDER, OR A SANDDAB, THEN MAKE <u>THE FOLLOWING GILL RAKER COUNTS</u>:

GILL RAKERS ON THE 1ST ARCH:
Total: ____
Upper arm: ____
Lower arm: ____

GILL RAKERS ON THE 2ND ARCH:
Upper arm: ____

In the diagram below, draw in the characters of your fish. DRAW:

1. the mouth, showing the size
2. preoperculum and tail shape
3. lateral line curve
4. ADB size
5. any markings



Appendix V: Rockfish Species Description Form

SPECIES COMMON NAME:_____

DATE:_____

HAUL NUMBER:_____

FORK LENGTH:_____

A SPECIMEN COLLECTED? Yes No

WHAT COLOR CATEGORY IS THIS ROCKFISH (circle one)?

Red Banded

Red/black White-spotted red

Black

DOES THIS FISH HAVE A SYMPHYSEAL KNOB?

___None ____Yes, small and rounded ____Yes, long and prominent

DARK BLOTCHES ON THE BODY? - *Draw these (on back of form)*

____ None ____ Yes, bars extending below the lateral line

____ Yes, above lateral line only ____ Yes, dispersed all over body

OPERCULUM MARKINGS? - *Draw these markings (on back of form)*

____ None ____ Diffuse opercular blotch or smudge

____ Bars radiating from the eye ____ Very distinct opercular blotch

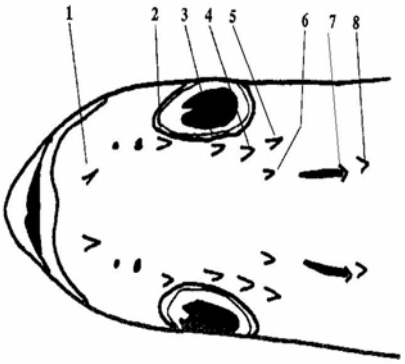
PERITONEUM COLOR = _____

HEAD SPINES ARE (circle one) -

weak strong

HEAD SPINES PRESENT (circle those found) -

1 2 3 4 5 6 7 8



ANAL FIN SLANT, AS COMPARED TO THE BODY AXIS

___ Perpendicular ___ Anterior slant (angle is toward the head)

___ Posterior slant (angle is toward the tail) ___ Rounded anteriorly

ANAL FIN SPINES -Compare the second anal spine length to the third anal spine

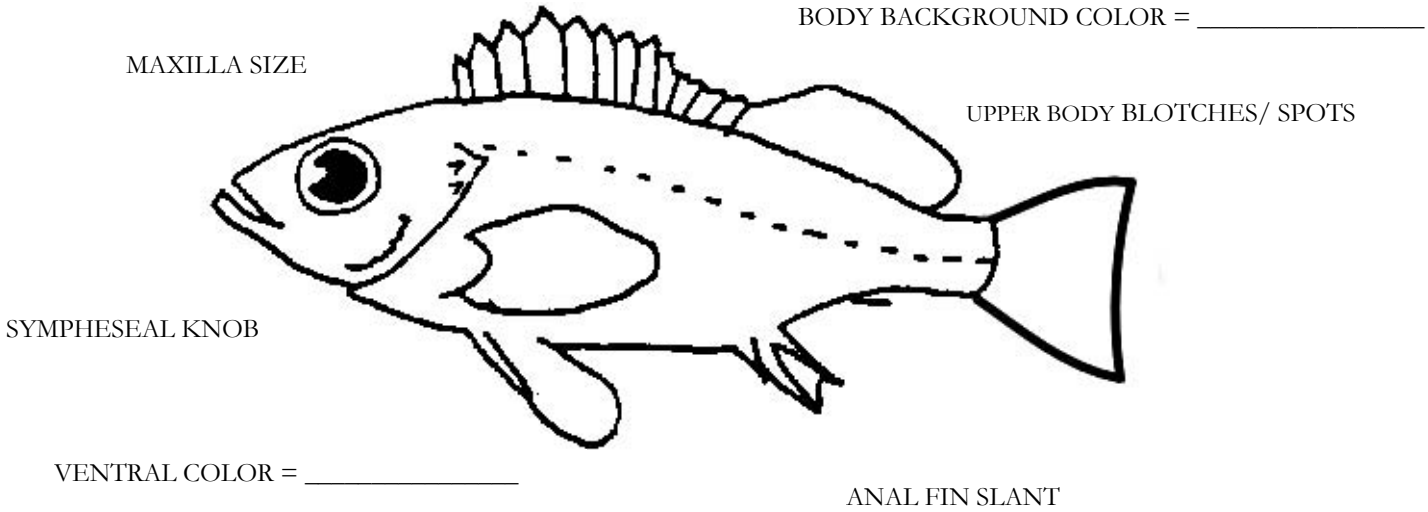
____Equal in length

____Second anal spine longer than third

____Second anal spine shorter than third

NUMBER OF SPINES UNDER THE EYE - 0 1-2 >2

DRAW THE FISH CHARACTERISTICS ON THIS DIAGRAM



NOTE: IF A KEY CHARACTERISTIC THAT DISTINGUISHES ONE SIMILAR ROCKFISH FROM ANOTHER IS GILL RAKER COUNT OR FIN RAY COUNT, THEN YOU MUST MAKE THOSE COUNTS AND RECORD HERE.

FIN RAY COUNTS

Which fin was counted? - _____
What was the count? - _____

GILL RAKER COUNT

Number of total rakers - _____

Appendix W: Miscellaneous Species Description Form

SPECIES COMMON NAME:_____

DATE:_____

HAUL NUMBER:_____

FISH LENGTH:_____

A SPECIMEN COLLECTED? Yes No

CRAB - HOW MANY PAIRS OF WALKING LEGS DOES THE CRAB HAVE?

_____ Three

_____ Four

HOW MANY DORSAL FINS DOES THE FISH HAVE?

_____ One

_____ One dorsal and an adipose fin

_____ Two

_____Three

PELVIC FINS ARE - present absent modified into a sucker disc

CAUDAL FIN DESCRIPTION -

_____ A caudal peduncle and a regular tail

_____ Caudal fin meets the anal fin and there is no caudal peduncle (an eel-like tail)

CHECK OFF THE SPECIAL FEATURES OF YOUR FISH SPECIMEN

_____ Photophores
_____ Adhesive disc on bottom
_____ Large white pores on head
_____ Multiple lateral lines
_____ No lateral line
_____ Scaleless
_____ Spines on head
_____ Red dorsal fin
_____ Pelvic axillary process on pelvic fin
_____ Scutes on bottom
_____ Barbel present
_____ Body encased in bony plates
_____ Blue eyes

Describe the color and markings of the fish, or the characters of the crab you have keyed here.

_____

_____

_____

_____

_____

_____

_____

Draw your fish or crab here. Indicate on the drawing the mouth size, body shape, fin locations, color and markings, and any specific characters that helped in keying the specimen.

Please do not copy the drawing from the identification manual! If your identification is incorrect, your drawing could help NMFS staff determine the correct identification.

Appendix X: Contact Addresses and Numbers

West Coast Groundfish Observer Program
Northwest Fisheries Science Center (NWFSC)
2725 Montlake Boulevard East
Seattle, WA 98112
nwfsc.observerprogram@noaa.gov

To reach any of the NMFS Coordinators, call Toll-free 1-866-780-8064

NMFS Coordinators

Washington
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NWFSC
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Seattle, WA 98112
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(206) 499-9571 Cell
(206) 860-6792 Fax
Janell.Majewski@noaa.gov

Oregon
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Hatfield Marine Science Center
2032 SE OSU Dr.
Newport, OR 97365
(541) 867-0527 Office
(503) 791-2703 Cell
(541) 867-0505 Fax
Allen.Cramer@noaa.gov

California
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PSMFC State Liaisons

Carol Henry
Washington Fish and Wildlife
(360) 249-4628

Steve Kupillas
Oregon Department of Fish and Wildlife
(541) 867-0300 X262

Mike Fukushima
Califonia Department of Fish and Game
(707) 441-5797

Appendix Y: Useful Websites

WCGOP Observer Related Sites

West Coast Groundfish Observer Program:
http://www.nwfsc.noaa.gov/research/divisions/fram/observer/index.cfm

WCGOP Database Log-on
http://efcldev.nwfsc.noaa.gov/pls/noaa/logon.display

Pacific States Marine Fisheries Commission (PSMFC)
http://www.psmfc.org/index.html

Alaskan Observers, Inc. (AOI)
http://www.alaskanobservers.com

Medical- Blue Shield
http://www.wa.regence.com/

Fisheries Management on the West Coast:

Pacific Fishery Management Council (PFMC):
http://www.pcouncil.org/

NOAA Fisheries Northwest Regional Office (groundfish management):
http://www.nwr.noaa.gov/1sustfsh/gdfsh01.htm

International Pacific Halibut Commission:
www.iphc.washington.edu/halcom/default.htm

State Agencies

California Department of Fish and Game (DFG)
http://www.dfg.ca.gov/

Oregon Department of Fish and Wildlife (ODFW)
http://www.dfw.state.or.us/

Washington Department of Fish and Wildlife (WDFW)
http://wdfw.wa.gov/

Fisheries Research on the West Coast:

NOAA Northwest Fisheries Science Center:
http://www.nwfsc.noaa.gov/research/divisions/fram/index.cfm

Collaborative research: Partnerships for improved science and fisheries knowledge
http://www.fishresearchwest.org/

Pacific Marine Conservation Council
http://www.pmcc.org/news.html

Fisheries News:

Heads up: News connecting the West Coast Fishing Community
http://www.heads-up.net/

Fish Identification:

Fish Base: Database of over 28,000 species with images.
http://www.fishbase.org/search.cfm

Marine Safety:

The Alaska Marine Safety Education Council
http://www.amsea.org/

EPIRB On-line registration and forms
http://beaconregistration.noaa.gov/rgdb/forms/epirb.pdf

Vessel Information:

U.S. Coast Guard Vessel Search
http://cgmix.uscg.mil/psix/PSIX2/VesselSearch.asp

NW Region List of LE permits
http://161.55.16.25/main/nwp_system_version3/nwp_public/index_pub_permits.cfm

Marine Weather:

NOAA: National Weather Service
http://www.nws.noaa.gov/

iwindsurf.com: This web site provides an excellent GUI for real time wind reports
http://www.iwindsurf.com/windandwhere.iws

Observer Associations, Interest Groups:

Association for Professional Observers:
http://www.apo-observers.org/Observerweb/Sites/Links_navbar_side/linksfolder/links_obs_data.htm

Observer net:
http://www.observernet.org/obsforum/index.php

International Fisheries Observer Conference:
http://www.fisheriesobserverconference.com/

Observer Programs worldwide:

Domestic

North Pacific Groundfish Observer Program:
http://www.afsc.noaa.gov/refm/observers/default.htm

Alaska Marine Mammal Observer Program
http://www.fakr.noaa.gov/protectedresources/observers/mmop.htm

California/ Oregon Drift Gillnet Observer Program
http://swr.ucsd.edu/psd/codgftac.htm

Hawaii Longline Observer Program
http://swr.nmfs.noaa.gov/pir/index.htm

Northeast Fisheries Observer Program:
www.nefsc.noaa.gov/sos/fishobs/fishobs.html

Florida Museum of Natural History- Shark Fishery Observer Program:
http://www.flmnh.ufl.edu/fish/sharks/csop/csopjob.htm

Southeast Pelagic Observer Program
http://www.sefsc.noaa.gov/pop.jsp

Gulf of Mexico Shrimp Fishery Observer Program
http://galveston.ssp.nmfs.gov/galv/research/management.htm#observer_program

National Observer Program
http://www.st.nmfs.gov/st1/nop/

Foreign

Canadian at-sea fisheries observer program:
http://www.qc.dfo-mpo.gc.ca/peches/en/surveillance/programme.htm

Canadian observer provider:
www.biorex.com/services_e/th03.html

Canadian observer provider:
http://www.archipelago.bc.ca/fm-overview.htm

Canadian observer training:
http://web.mala.bc.ca/faep/Observer.htm#Overview

Marine Resources Assessment Group (MRAG) (multiple programs)
http://www.mragltd.com/

Antarctica CCAMLR:
http://www.ccamlr.org/pu/E/sc/fish-monit/fm-intro.htm

Australia:
www.afma.gov.au/observer%20program/default.php

GLOSSARY

A - B

ABC - "Acceptable Biological Catch" - the annual harvest level for each species based only on biological considerations

Aft - towards the stern or back end of a vessel

Amidships - midway between the bow and stern of a ship, or on the centerline

Anchor/Buoy lines - Sections of line that join the groundline and anchors on the bottom of the ocean to the buoys or "bags" on the surface.

Athwart ships - side-to-side across a ship, perpendicular to the centerline

Bag - the codend or another name for a buoy.

Bait bags/jars - Containers filled with ground bait that are hung inside pots to attract fish.

Beam - width of a ship

Benthic - living in direct relation with the bottom

Bias- Tending to yield one outcome more frequently than others. Factors affecting the randomness of a sample, including possible mechanical sorting of catch by an incline belt, or purposeful presorting by a crew member, will introduce bias.

Bight - a loop or turn in a line

Bleeder/Sorter - Crewman assigned to sort bycatch out of the catch, and to cut the "throat"of the cod.

Block/Hydro/Hauler - Hydraulically driven wheel into which the groundline is placed during gear retrieval. As the wheel spins the groundline is drawn on board.

Boat Share - the percentage of the gross which goes to the vessel owner

Bobbin - a round, rubber or steel roller used in the footrope of a bottom net to protect the net from damage

Bosun - person in charge of a ship's rigging, anchors, cables and deck crew

Bottom - (1) ocean floor, (2) fishing depth, or (3) a ship hull. Which meaning to apply must be taken from context.

Bow - the front section of a boat or ship

Bowline - a type of knot used to form an eye in the end of a rope.ii

Brailer - a type of netting that is attached to a crane and used to transport fish and other materials from one vessel to the dock or to another vessel

Breech - a behavioral characteristic of some marine mammals such as humpback whales, where they rise vertically out of the water, and then with most of their body above the surface, they fall to their back or side

Bridge - the control center of a ship

Bridle - wire attached to the headrope, footrope or side panel of a net, by which the net is towed

Bulkhead - a wall separating compartments of a ship

Bulwarks - the upper section of the side plating of a ship, which extends above and around the upper deck

C

Capstan (gypsy) - an upright, spool-shaped, power rotational cylinder around which cables or hawsers are wound

Catch Category – Categories comprised of one or more species for management purposes.

Catcher boat - vessel that is used for catching fish and that does not process (freeze) fish on board

Chaffing gear - protective carpeting (or strands of nylon forming a carpet pile) on the outer, underside of the trawl net to keep it from catching and ripping on obstacles on the bottom

Chief - the engineer; responsible for care of engines and deck machinery

Choker, choke strap - a loop of wire or rope used to cinch off the net or codend

Chopper - Machine used to grind frozen herring or squid for bait or the person assigned this duty.
Cleat - a heavy piece of wood or metal having two horns around which ropes may be made fast or belayed, usually secured to a fixed object such as the dock or deck
Coded wire tag - small tag (3mm) etched with binary code that are inserted into the snout of fishes for later identification
Codend - the end "bag" of a trawl net where the majority of the fish are collected and held
Coiler - Person or machine that is designated to coil line as it is retrieved by the block.
Combing - a low partition that separates the trawl deck from the side pockets
Companionway - entrance/stairway from deck to fo'c'sle and engine room
Compliance - being in accordance with the fishing regulations
Composition - In the groundfish Observer Program, this refers to the makeup of harvested species in a catch, and the sample you collect.
Cookie (disc) - a flat, round piece of rubber with a hole in the center strung on a wire rope or chain to protect it from abrasion and to stir up a mud cloud. Used on non-pelagic trawl gear.
Crucifier - A pair of rollers or steel pegs which stand vertically with only enough room for the groundline to pass between. During gear retrieval the groundline passes between the rollers and the hooks are pulled out of the fish.

D - E

Demersal - dwelling at or near the bottom
Discard – Everything that is not retained.
Disembark - to get off a vessel
Diver/Trailer buoys - A small buoy attached to the main buoy with a length of line. The diver buoy "trails" behind the main buoy and allows a larger target for grappling.
Dogs - Metal hooks that are hydraulically controlled to secure a pot to a launcher.
Door - a large steel or alloy structure attached to each main wire (in front of the net) to spread the net horizontally by means of hydrodynamic and friction forces
Draft - vertical distance from keel to waterline of a ship
Drop-off - Those organisms that fall or are knocked off of a hook prior to their being landed.
Drum - a metal spool or cylinder around which cable, etc. is wound
Drumhead - the top of a capstan, into which bars are inserted for leverage in turning it
Ebb tide - outgoing tide
EEZ - "Exclusive Economic Zone" - the term for the 200 mile jurisdiction zone, in which a nation has exclusive fishing rights, formerly called the FCZ
Embarkation - to board a vessel
EPIRB - "Emergency Position Indicator Radio Beacon"
Expansion straps (container lines) - a series of lines running around the circumference of a codend to provide strength and help maintain the shape of the bag

F

Fathom - a measure of length or depth equal to six feet
Fingers/Triggers - Small plastic strips located in the tunnel of a pot which allow fish to enter a pot but not exit.
Fishfinder - an electronic device for locating schools of fish under a vessel
Fishing line - a length of chain or wire in the bottom, front end of a net between the footrope and the bolsh line
Fishing mortality - Removal (deaths) of fish from a population due to fishing activity.

Flatfish - fish which are laterally compressed and orient themselves in the water with their lateral surfaces or sides towards the surface and bottom.
Flatlink - a piece of cut or cast hardware, generally oblong in shape, with leg diameter smaller in certain areas to allow attachment of a G-hook; used where wires must be connected and disconnected frequently
Flood tide - incoming tide
Fo'c'sle (from: forecastle) - the forward part of a ship where sailor's quarters are located
Footrope - on a non-pelagic net, a series of bobbins, tires or discs strung on chain or wire rope attached to the bottom front of a bottom net to protect the net from damage. On a midwater net, the rope or wire running along the front, bottom edge of the net.
Forward - towards the bow of a vessel
Fresh weight - the weight of the whole fish (or animal) as it was when alive. Also called round weight, whole weight.

G

Galley - ship's kitchen and/or mess hall
Gallows - structure from which trawl blocks are hung; separate units port and starboard
Gangion - The length of line that connects the hook to the groundline. It is often only two to three feet long.
Gantry - a frame structure, usually at the aft of a vessel, which supports pulleys (blocks) used in setting and retrieving trawl nets
Gas bladder - a sac filled with air or similar gases in the body cavity of a fish. May or may not be attached to the throat by a duct.
G-hook - a piece of cut or cast iron hardware in the shape of a "G", used with a flatlink where wires must be connected and disconnected frequently
Gill rakers - bony tooth like structures on the anterior edges of the gill arches. For protection or straining out food.
Gilson - a single hookline (as distinguished from a multiple block) used to assist in setting, hauling and moving gear on deck
Groundline/Mainline - The length of line to which all of the hooks are attached. This line is the "backbone" of the gear
Gunnel or Gunwale - the upper edge of the side of a boat
Gurdy - special winch for hauling of longlines or trolling lines
Gypsyhead - a metal drum with a smooth concave surface, usually mounted on a winch. Several wraps of line around the gypsy provide enough friction while it is turning to raise heavy loads smoothly because the line slips and is easily controlled, like the friction on a clutch plate.

H - K

Halibut excluder - A divider located in the tunnel of a pot that restricts the size of the opening.
Hatch - an opening in a deck or bulkhead of a ship.
Haul - a catch of fish from one tow of a net or longline
Haulback - when the vessel lifts the net out of the fishing depth
Hawser - any large rope (generally five inches or more in circumference) used primarily for towing, mooring or hauling
High grading - when a vessel puts up product but later discards it overboard in favor of a more valuable product
Hook - Usually a three pronged grappling hook used to snag the trailer buoy line.
Hook Counts - The average number of hooks per segment of gear.
Horn Off - To knock organisms off of a hook using the butt of a gaff.

I-beam - a steel beam shaped like an "I" in cross section
Intermediate - a gradually tapered section, generally of small mesh, between the back body of a trawl and the codend.
Joint Venture - a cooperative fishing/processing effort between vessels of different nationalities
Knot - a measure of time multiplied by distance, equaling speed. One knot equals one nautical mile (6080 feet) in one hour.

L - O

Launcher - Hydraulic lift, usually located on the port side of a vessel, used to "launch" pots over the side of the vessel and to adjust the angle of the pot when it is being emptied.
Lay - the direction in which the strands of a rope are twisted (right or left) or the degree of tightness with which they are twisted (soft, medium, hard, etc.)
Lazaret - a storage place between the decks of a ship
Lee, Leeward - the side protected from the wind, opposite the "windward" side
Live Tanks - tanks or bins on factory trawler vessels where the catch is dumped prior to sorting or processing
Lobby - another name for a fish bin on a catcher/processor
Main Wires - the two large cables used to connect the trawl net to the vessel while fishing
Master - fishing master and/or captain
Mustang suit - Insulated and waterproof coveralls worn in the cold months while sampling on deck.
Net reel - a hydraulic drum on the deck on which the net and most of the rigging are wound
Otter trawl - the type of net gear used on stern trawlers
Otterboard - another name for a trawl door
OY - "Optimum Yield" - a range within which summed Total Allowable Catches must fall

P

Panel - Mesh netting attached to a square metal frame. Two large panels and four smaller panels are attached to a heavy steel frame box to form the six sides of a pot.
Pelagic - midwater
Peritoneum - the lining of the gut cavity
Pew, Pew stick - a sharp-ended pole, which is used to skewer fish and toss them to another location
Pick/"Running the hook" - Hook connected to the end of the boom which is attached to the bridle and is used to lift a pot onto the launcher as the pot is being retrieved.
Plotter - Electronic mapping device that displays the local area and the vessel's position on it. The plotter allows skippers to record the area of a string and also the number of pots in a string on a digital map display.
Pod - a school of marine mammals; such as seals, whales or dolphins
Population - The total of individuals occupying an area or making up a whole. When sampling aboard a trawler, a population is defined as the catch from a single haul.
Porthole - a window in the hull or the outside bulkhead of a ship
Pot Tie - A short piece of line used to tie pots together when they are stacked on deck.
Predominant species - species that are the most abundant in the catch - not necessarily the target species
Presorting - the segregation and/or removal of any item(s) or organism(s) from the catch prior to the point where an Observer is collecting a sample.
Prohibited species or prohibited species groups - Species whose allowable retention is zero. Salmon, Pacific Halibut, and Dungeness crab are prohibited species.
Prohibited species sampling - the weight of groundfish catch sorted by the Observer to determine only the numbers and weights of salmon, herring, halibut, king crab, and tanner crab present
PSC - "Prohibited Species Catch" - a harvest limit usually placed on halibut, salmon, crabs or other species

which must be discarded in the groundfish fisheries

R

R.D.F. - Radio direction finder
Radio Call Sign - four letters and/or numbers, which are an international identifier of a vessel. The International Radio Call Sign (IRCS) is painted in large letters on the side of each vessel and on the deck of the flying bridge.
Random - Relating to a set, each of whose elements have an equal probability of occurring in a sample. These elements are chosen as sample units in a manner, which eliminates subjectivity.
Random sample frame - The population divided into independent countable units.
Regenerated scale - a fish scale that has grown in to replace one that was lost. Regenerated scales are useless for aging a salmon, but can be used to identify it to species.
Reserve - a portion of quota set aside at the beginning of the fishing year to allow for uncertainties in preseason estimates of DAP catch
Riblines - heavy lines or chains that run down the length of the trawl net to strengthen it
Roller - A device made up of one or more metal pins that spin allowing the groundline to be pulled up and over the rail of a vessel during retrieval such that tension and friction on the line is reduced.
Roller station/pit - Term used to describe the area where fishermen stand while retrieving the line and gaffing fish coming in over the roller.
Rollerman - A crewman who stands in the roller station and monitors the retrieval of the gear. The rollerman lands any commercially valuable fish and excludes any non-commercially valuable fish from being landed.
Rostrum - a pointed, calcareous, median extension on the anterior end of crab carapaces
Round weight - the weight of the whole fish (or animal) as it was when alive, synonymous with fresh weight and whole weight
Roundfish - fish that orient themselves in the water with the dorsal side towards the surface and ventral side towards the bottom
"Run pots" - A phrase used interchangeably with "retrieve pots". It is the phrase used in the vessel logbook to indicate the number of pots that have been retrieved from a string.

S

Sample size - The portion of the population that is sampled.
Sample type - The method used to select part of a population. This includes basket, whole haul, partial haul, and the pre-sorted "X" sample types.
Sample weight - The actual weight in kilograms of a composition sample.
Sampling - The process of selecting part of a population for the purpose of determining the parameters, or characteristics, of the whole population. Composition sampling refers to taking samples of a haul in order to determine the fishing mortality of species occurring in the sample.
Scupper - a hole in the bulwarks which allows water to drain from the deck
Segment of Gear - In this manual a segment of gear refers to the standard unit the vessel uses for measuring gear. This could refer to a mag, skate, tub, or coil of gear.
Set - The entire length of groundline from the first hook to the last hook, also referred to as a "string" of gear.
Sheave - a wheel with a grooved rim, such as is mounted in a pulley block to guide the rope or cable
Shot - A pre-measured length of buoy line, usually 10 to 20 fathoms long. Normally there are two set lengths, a "Long" shot and a "Short" shot. When setting a string, the skipper will tell the crew how many shots to tie to a pot for various bottom depths.
Skate - a length of longline gear, usually 100 fathoms or 600 feet long

Skate bottom - a fabric square with lines on the corners to tie it into a bundle once a longline "skate" has been coiled onto it.
Skate or Mag markers - Markers in the groundline that separate the sections of gear. These may be flourescent tape woven onto the line, knots, line splices, carabineers, or magazine (mag) clips.
Skates/Tubs/Coils - Terms used to describe the smaller segments of gear within a set or a magazine.
Spatial - Referring to a unit of space used in random sampling. For example: a third of a bin, or a section of trawl alley, are spatial units.
Species composition sample - to sort a defined weight of catch such that each organism sampled for is grouped by family or by species and to determine the number and weight of the organisms in each group
Spring line - a mooring line attached amidships
SSB - "Single Side Band" radio used for long distance contact
Stack - This term is used on pot vessels to refer to pots stacked on the back deck.
Starboard - the right side of a ship (when one is looking forward)
Stern - the aft or back end of a vessel
Stern ramp (slip) - a sloping ramp in the stern of a trawler between the deck and the water line, through which the net is set and hauled.
Stern trawler - any of various sized fishing vessels which trawl a conical shaped mesh net through the water, haul it up a ramp through the stern of the ship, empty, and process the catch to make a wholesale fish product. These vessels may fish for a month or more at sea without support.
String - Pots deployed individually and are not attached to one another in any way. This term refers to pots set at a similar time in a similar area and depth. What a skipper calls a string varies considerably between vessels. Strings are analogous to sets.
Sub-sample - the weight of catch designated by the Observer which weighs less than the sample weight and is processed for a supplemental task to determining the composition of a haul, such as sampling for average weight.

T - Z

Table - Some vessels have a sorting table on the back deck that pivots on one axis. The contents of a pot are dumped onto the table, and the table is swung out of the way to re-launch the pot.
TAC - "Total Allowable Catch" - annual harvest levels based on biological, economic and social factors
Taper - to cut webbing according to a given formula for fitting into a trawl
Tare - a deduction from gross weight to obtain net weight. Usually made to allow for the weight of a container.
Temporal - Referring to a unit of time used in random sampling. For example: one hour of processing time, or systematic intervals of ten minutes, are examples of temporal units.
Trawl - a cone shaped net, towed through the water to catch fish
Trawl Alley - the central passage on a trawl vessel where the codend is placed after haulback
Trawl Doors - often referred to as "doors," these are two metal plates, each attached to a main wire, designed to keep the mouth of the net open while fishing
Trip - the time period from when the vessel leaves harbor until it returns to harbor to offload product or catch
Trip Limit – The amount of a catch category that a vessel is allowed to retain by trip.
Tuning/Overhauling gear - Term used to describe the work involved in straightening hooks, replacing gangions, or splicing the damaged groundlines.
Tunnel - Short mesh-lined openings on two or three sides of a pot. These are the entrances to the trap. Fish and crab are able to swim in but are unable to make their way back out due to the fingers/triggers.
Under way - vessel in forward motion, running. According to Coast Guard regulation, a vessel is under way

if it is not at anchor or at dock, so a vessel adrift is technically under way.
Warp (main wire) - the cables on a trawler which run from the main winches to the trawl doors on the net
Weighed sample - a "basket" sample. The catch sampled by the Observer is weighed on a scale.
Winch - a hydraulic machine with one or more drums on which to coil rope, chain, or cable for hauling or hoisting
Wing - the sides off a trawl net near the opening, usually with larger mesh than the rest off the net
Wrister - a coated cloth tube worn on the arm, extending from the elbow and covering the wrists. Keeps arms warm and dry. Fish blood and slime are more easily washed out from these than from shirtsleeves.

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