

## CHAPTER 3: Potential Species-Related and Process-Related Hazards

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### INTRODUCTION

- **Purpose**

The purpose of this chapter is to identify potential food safety hazards that are species related and process related. It also provides information on how the illicit substitution of one species for another can impact on the identification of species-related hazards.

To assist in identifying species-related and process-related hazards, this chapter contains three tables:

- **Table 3-2, “Potential Vertebrate Species-Related Hazards,”** contains a list of potential hazards that are associated with specific species of vertebrates (species with backbones). These hazards are referred to as species-related hazards;
- **Table 3-3, “Potential Invertebrate Species-Related Hazards,”** contains a list of potential hazards that are associated with specific species of invertebrates (species without backbones). These hazards are also referred to as species-related hazards;
- **Table 3-4, “Potential Process-Related Hazards,”** contains a list of potential hazards that are associated with specific finished fishery products, as a result of the finished product form, the package type, and the method of distribution and storage. These hazards are referred to as process-related hazards.

It is important to note that the tables provide lists of potential hazards. You should use the tables, together with the information provided in Chapters 4 through 21, and your own expertise or that of outside experts, to determine whether the hazard is significant for your particular product and, if so, how it should be controlled.

- **Species substitution**

Illicit substitution of one species for another may constitute economic fraud and/or misbranding violations of the Federal Food, Drug, and Cosmetic Act. Furthermore, species substitution may cause potential food safety hazards to be overlooked or misidentified by processors or end users, as shown in Table 3-1, “The Effect of Misbranding Through Species Substitution on the Identification of Potential Species-Related Hazards.” These examples are based on actual incidents of species substitution or misbranding.

TABLE 3-1

**THE EFFECT OF MISBRANDING THROUGH SPECIES SUBSTITUTION ON THE IDENTIFICATION OF POTENTIAL SPECIES-RELATED HAZARDS**

ACTUAL MARKET NAME OF PRODUCT	POTENTIAL SPECIES- RELATED HAZARDS ASSOCIATED WITH THE ACTUAL PRODUCT (FROM TABLE 3-2)	PRODUCT INAPPROPRIATELY LABELED AS	POTENTIAL SPECIES-RELATED HAZARDS THAT WOULD BE IDENTIFIED BASED ON INAPPROPRIATE SPECIES LABELING (FROM TABLE 3-2)
Escolar	Gempylotoxin Histamine	Sea bass	Parasites
Puffer fish	Tetrodotoxin Paralytic Shellfish Poisoning	Monkfish	Parasites
Spanish mackerel	Parasites Histamine Ciguatera Fish Poisoning	Kingfish	None
Basa	Environmental chemical contaminants and pesticides	Grouper	Parasites Ciguatera Fish Poisoning
Grouper	Parasites Ciguatera Fish Poisoning	Cod	Parasites

TABLE 3-2

### POTENTIAL VERTEBRATE SPECIES-RELATED HAZARDS

Note: You should identify pathogens from the harvest area as a potential species-related hazard if you know or have reason to know that the fish will be consumed without a process sufficient to kill pathogens, or if you represent, label, or intend for the product to be so consumed. (See Chapter 4 for guidance on controlling pathogens from the harvest area.)

MARKET NAMES	LATIN NAMES	HAZARDS				
		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
AHOLEHOLE	<i>Kublia spp.</i>					
ALEWIFE OR RIVER HERRING	<i>Alosa pseudoharengus</i>			√	√	
ALFONSINO	<i>Beryx spp.</i>					
	<i>Centroberyx spp.</i>					
ALLIGATOR	<i>Alligator mississippiensis</i>				√	
	<i>Alligator sinensis</i>				√	
ALLIGATOR, AQUACULTURED	<i>Alligator mississippiensis</i>				√	√
	<i>Alligator sinensis</i>				√	√
AMBERJACK	<i>Seriola spp.</i>		CFP	√		
AMBERJACK OR YELLOWTAIL	<i>Seriola lalandi</i>			√		
AMBERJACK OR YELLOWTAIL, AQUACULTURED	<i>Seriola lalandi</i>			√	√	√
ANCHOVY	<i>Anchoa spp.</i>		ASP <sup>5</sup>	√		
	<i>Anchoviella spp.</i>		ASP <sup>5</sup>	√		
	<i>Cetengraulis mysticetus</i>		ASP <sup>5</sup>	√		
	<i>Engraulis spp.</i>		ASP <sup>5</sup>	√		
	<i>Stolephorus spp.</i>		ASP <sup>5</sup>	√		
ANGELFISH	<i>Holacanthus spp.</i>					
	<i>Pomacanthus spp.</i>					
ARGENTINE QUEENFISH	<i>Argentina elongata</i>					
BARRACUDA	<i>Sphyraena spp.</i>		CFP		√	
	<i>S. barracuda</i>		CFP		√	
	<i>S. jello</i>		CFP		√	
BARRAMUNDI	<i>Lates calcarifer</i>				√	

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		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
BARRAMUNDI AQUACULTURED	<i>Lates calcarifer</i>				√	√
BASA OR BOCOURTI <sup>®</sup>	<i>Pangasius bocourti</i>				√	
BASA OR BOCOURTI <sup>®</sup> , AQUACULTURED	<i>Pangasius bocourti</i>				√	√
BASS	<i>Ambloplites spp.</i>				√	
	<i>Micropterus spp.</i>				√	
	<i>Morone spp.</i>				√	
	<i>Stereolepis gigas</i>				√	
	<i>Synagrops bellus</i>				√	
BASS, AQUACULTURED	<i>Morone spp.</i>				√	√
	<i>Centropristis spp.</i>				√	√
BASS, SEA	<i>Acanthistius brasilianus</i>	√ <sup>3</sup>				
	<i>Centropristis spp.</i>	√ <sup>3</sup>				
	<i>Dicentrarchus labrax</i>	√ <sup>3</sup>				
	<i>Lateolabrax japonicus</i>	√ <sup>3</sup>				
	<i>Paralabrax spp.</i>	√ <sup>3</sup>				
	<i>Paranthias furcifer</i>	√ <sup>3</sup>				
	<i>Polyprion americanus</i>	√ <sup>3</sup>				
	<i>Polyprion oxygeneios</i>	√ <sup>3</sup>				
	<i>Polyprion yanezi</i>	√ <sup>3</sup>				
BASS, SEA, AQUACULTURED	<i>Dicentrarchus labrax</i>	√ <sup>3</sup>			√	√
BATA	<i>Labeo bata</i>				√	
BIGEYE	<i>Priacanthus arenatus</i>					
	<i>Pristigenys alta</i>					
BLUEFISH	<i>Pomatomus saltatrix</i>			√	√	
BLUEGILL	<i>Lepomis macrochirus</i>				√	

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		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
BLUENOSE	<i>Hyperoglypbe antarctica</i>					
BOMBAY DUCK	<i>Harpadon nebereus</i>				√	
BONITO	<i>Cybiosarda elegans</i>			√		
	<i>Gymnosarda unicolor</i>			√		
	<i>Orcynopsis unicolor</i>			√		
	<i>Sarda spp.</i>			√		
BOWFIN AND ROE	<i>Amia calva</i>				√	
BREAM	<i>Abramis brama</i>					
	<i>Acanthopagrus spp.</i> <sup>7</sup>					
	<i>Argyrops spp.</i>					
	<i>Gymnocranius grandoculis</i> <sup>7</sup>					
	<i>Monotaxis spp.</i>					
	<i>Sparus aurata</i>					
	<i>Wattsia spp.</i>					
BREAM, AQUACULTURED	<i>Abramis brama</i>				√	√
BREAM OR BOGUE	<i>Boops boops</i>					
BREAM, THREADFIN	<i>Nemipterus japonicus</i>					
BUFFALOFISH	<i>Ictiobus spp.</i>				√	
BULLHEAD	<i>Ameiurus spp.</i>				√	
BURBOT	<i>Lota lota</i>				√	
BUTTERFISH <sup>8</sup>	<i>Odax pullus</i>				√	
	<i>Peprilus spp.</i>				√	
	<i>Pampus cinereus</i>				√	
CAPARARI <sup>8</sup>	<i>Pseudoplatystoma tigrinum</i>				√	
CAPELIN AND ROE	<i>Mallotus villosus</i>	√ <sup>3</sup>				

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		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
CARP	<i>Barbonymus spp.</i>				√	
	<i>Cyprinus carpio</i>				√	
	<i>Hypophthalmichthys molitrix</i>				√	
	<i>Hypophthalmichthys nobilis</i>				√	
	<i>Carassius carassius</i>				√	
CARP, AQUACULTURED	<i>Cyprinus carpio</i>				√	√
	<i>Hypophthalmichthys molitrix</i>				√	√
	<i>Hypophthalmichthys nobilis</i>				√	√
	<i>Carassius carassius</i>				√	√
CASCARUDO <sup>8</sup>	<i>Callichthys callichthys</i>				√	√
CATFISH	<i>Ameiurus catus</i>				√	
	<i>Ictalurus spp.</i>				√	
	<i>Pylodictis oliveris</i>				√	
CATFISH, AQUACULTURED	<i>Ictalurus spp.</i>				√	√
CHAR	<i>Salvelinus alpinus</i>				√	
CHAR, AQUACULTURED	<i>Salvelinus alpinus</i>				√	√
CHARACIN	<i>Leporinus obtusidens</i>				√	
CHARAL	<i>Chirostoma jordani</i>					
CHIMAERA	<i>Harriota raleighana</i>					
	<i>Hydrolagus spp.</i>					
CHIRING	<i>Apocryptes bato</i>					
CHUB	<i>Coregonus kiyi</i>				√	
	<i>Kyphosus spp.</i>				√	
	<i>Semotilus atromaculatus</i>				√	

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		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
CISCO OR CHUB	<i>Coregonus alpenae</i>				√	
	<i>Coregonus reighbardi</i>				√	
	<i>Coregonus zenithicus</i>				√	
CISCO OR TULLIBEE	<i>Coregonus artedii</i> <sup>7</sup>				√	
CLARIAS FISH OR WALKING CLARIAS FISH <sup>8</sup>	<i>Clarias spp.</i>				√	
CLARIAS FISH OR WALKING CLARIAS FISH, AQUACULTURED <sup>8</sup>	<i>Clarias anguillaris</i>				√	√
	<i>Clarias gariepinus</i>				√	√
COBIA	<i>Rachycentron canadum</i>	√ <sup>3</sup>				
COBIA, AQUACULTURED	<i>Rachycentron canadum</i>	√ <sup>3</sup>			√	√
COD	<i>Arctogadus spp.</i>	√ <sup>3</sup>				
	<i>Boreogadus saida</i>	√ <sup>3</sup>				
	<i>Eleginus gracilis</i>	√ <sup>3</sup>				
	<i>Gadus spp.</i>	√ <sup>3</sup>				
COD OR ALASKA COD	<i>Gadus macrocephalus</i>	√ <sup>3</sup>				
COD, MORID	<i>Lotella rhacina</i>	√ <sup>3</sup>				
	<i>Mora moro</i>	√ <sup>3</sup>				
	<i>Pseudophycis barbata</i> <sup>7</sup>	√ <sup>3</sup>				
	<i>Pseudophycis spp.</i>	√ <sup>3</sup>				
COROATA <sup>8</sup>	<i>Platynemateichthys notatus</i>	√ <sup>3</sup>			√	
CORVINA	<i>Cilus gilberti</i> <sup>7</sup>	√ <sup>3</sup>				
	<i>Micropogonias undulates</i> <sup>7</sup>	√ <sup>3</sup>				
CRAPPIE	<i>Pomoxis spp.</i>				√	

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		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
CROAKER	<i>Argyrosomus spp.</i>				√	
	<i>Bairdiella spp.</i>				√	
	<i>Cheilotrema saturnum</i>				√	
	<i>Genyonemus lineatus</i>				√	
	<i>Micropogonias spp.</i>				√	
	<i>Nebris microps</i>				√	
	<i>Nibea spp.</i>				√	
	<i>Pachypops spp.</i>				√	
	<i>Pachyurus spp.</i>				√	
	<i>Paralonchurus spp.</i>				√	
	<i>Plagioscion spp.</i>				√	
	<i>Pseudotolithus spp.</i>				√	
	<i>Pterolithus spp.</i>				√	
	<i>Roncador stearnsi</i> <sup>7</sup>				√	
	<i>Umbrina roncador</i>				√	
<i>Odontoscion dentex</i>				√		
CROAKER OR CORVINA	<i>Cynoscion spp.</i>				√	
CROAKER OR SHADEFISH	<i>Argyrosomus regius</i>				√	
CROAKER OR YELLOWFISH	<i>Larimichthys polyactis</i> <sup>7</sup>				√	
CURIMBATA OR GURAMATA	<i>Prochilodus lineatus</i>					
CUSK	<i>Brosme brosme</i>					
CUSK-EEL	<i>Lepophidium spp.</i>					
	<i>Brotula clarkae</i>					
CUTLASSFISH	<i>Aphanopus carbo</i>					
	<i>Lepidopus caudatus</i>					
	<i>Trichiurus spp.</i>					
DACE	<i>Rhinichthys spp.</i>				√	



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		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
DACE, AQUACULTURED	<i>Rhinichthys spp.</i>				√	√
DORY	<i>Cyttus novaezealandiae</i>					
	<i>Zenopsis spp.</i>					
	<i>Zeus spp.</i>					
DRIFTFISH	<i>Hyperoglypbe spp.</i>					
DRUM	<i>Equetus punctatus</i>				√	
	<i>Larimus spp.</i>				√	
	<i>Pogonias cromis</i>				√	
	<i>Stellifer spp.</i>				√	
	<i>Totoaba macdonaldi</i>				√	
	<i>Umbrina coroides</i>				√	
DRUM OR CUBBYU	<i>Pareques umbrosus</i> <sup>7</sup>				√	
DRUM, FRESHWATER	<i>Aplodinotus grunniens</i>				√	
DRUM OR LION FISH	<i>Collichthys spp.</i>				√	
DRUM OR MEAGRE	<i>Argyrosomus regius</i> <sup>7</sup>				√	
DRUM OR QUEENFISH	<i>Seriphus politus</i>				√	
DRUM OR REDFISH	<i>Sciaenops ocellatus</i>				√	
DRUM OR REDFISH, AQUACULTURED	<i>Sciaenops ocellatus</i>				√	√
EEL	<i>Anguilla spp.</i>					
EEL, AQUACULTURED	<i>Anguilla Anguilla</i>				√	√
	<i>Anguilla australis</i>				√	√
	<i>Anguilla dieffenbachii</i>				√	√
	<i>Anguilla japonica</i> <sup>7</sup>				√	√

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		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
EEL, CONGER	<i>Ariosoma balearicum</i>				√	
	<i>Conger spp.</i>				√	
	<i>Gnathophis cinctus</i>				√	
	<i>Rhynchoconger spp.</i>				√	
	<i>Paraconger caudilimbatus</i>				√	
EEL, FRESHWATER	<i>Anguilla rostrata</i>				√	
EEL, FRESHWATER, AQUACULTURED	<i>Anguilla rostrata</i>				√	√
EEL, MORAY	<i>Gymnotborax funebris</i>		CFP			
	<i>Lycodontis javanicus</i>		CFP			
	<i>Muraena retifera</i>					
EEL, SPINY	<i>Notacanthus chemnitzii</i>					
EELPOUT	<i>Zoarcis americanus</i>	√ <sup>3</sup>				
	<i>Zoarcis viviparus</i>	√ <sup>3</sup>				
ELEPHANT FISH	<i>Callorhynchus millii</i>					
EMPEROR	<i>Lethrinus spp.</i>					
ESCOLAR OR OILFISH	<i>Lepidocybium flavobrunneum</i>		G	√		
	<i>Ruvettus pretiosus</i>		G	√		
FEATHERBACK	<i>Notopterus notopterus</i>					
FLATHEAD	<i>Platycephalus conatus</i>					
FLATWHISKERED FISH <sup>8</sup>	<i>Pinirampus pinirampu</i>				√	

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		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
FLOUNDER	<i>Ancylopussetta dilecta</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Arnoglossus scapba</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Reinhardtius evermanni</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Botbus spp.</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Chascanopsetta crumenalis</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Cleisthenes pinetorum</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Colistium spp.</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Cyclopussetta chittendeni</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Hippoglossoides robustus</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Limanda ferruginea</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Liopsetta glacialis</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Microstomus achne</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Paralichthys albigutta</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Hippoglossina oblonga</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Paralichthys olivaceus</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Paralichthys patagonicus</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Paralichthys squamilentus</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Pelotretis flavilatus</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Peltorbampus novaezeelandiae</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Platichthys spp.</i>	√ <sup>3</sup>			√ <sup>1</sup>	
<i>Pseudorbombus spp.</i>	√ <sup>3</sup>			√ <sup>1</sup>		
<i>Rhombosolea spp.</i>	√ <sup>3</sup>			√ <sup>1</sup>		
<i>Samariscus triocellatus</i>	√ <sup>3</sup>			√ <sup>1</sup>		
<i>Scophthalmus spp.</i>	√ <sup>3</sup>			√ <sup>1</sup>		

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		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
FLOUNDER, AQUACULTURED	<i>Ancylopsetta dilecta</i>	√ <sup>3,4</sup>			√	√
	<i>Arnoglossus scapba</i>	√ <sup>3,4</sup>			√	√
	<i>Reinhardtius evermanni</i>	√ <sup>3,4</sup>			√	√
	<i>Bothus spp.</i>	√ <sup>3,4</sup>			√	√
	<i>Chascanopsetta crumenalis</i>	√ <sup>3,4</sup>			√	√
	<i>Cleisthenes pinetorum</i>	√ <sup>3,4</sup>			√	√
	<i>Colistium spp.</i>	√ <sup>3,4</sup>			√	√
	<i>Cyclopsetta chittendeni</i>	√ <sup>3,4</sup>			√	√
	<i>Hippoglossoides robustus</i>	√ <sup>3,4</sup>			√	√
	<i>Limanda ferruginea</i>	√ <sup>3,4</sup>			√	√
	<i>Liopsetta glacialis</i>	√ <sup>3,4</sup>			√	√
	<i>Microstomus achne</i>	√ <sup>3,4</sup>			√	√
	<i>Paralichthys spp.</i>	√ <sup>3,4</sup>			√	√
	<i>Pelotretis flavilatus</i>	√ <sup>3,4</sup>			√	√
	<i>Peltorbampus novaezeelandiae</i>	√ <sup>3,4</sup>			√	√
	<i>Pseudorhombus spp.</i>	√ <sup>3,4</sup>			√	√
	<i>Rbombosolea spp.</i>	√ <sup>3,4</sup>			√	√
<i>Samariscus triocellatus</i>	√ <sup>3,4</sup>			√	√	
<i>Scophthalmus spp.</i>	√ <sup>3,4</sup>			√	√	
FLOUNDER OR DAB	<i>Limanda limanda</i> <sup>7</sup>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Limanda proboscidea</i> <sup>7</sup>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Limanda punctatissima</i> <sup>7</sup>	√ <sup>3</sup>			√ <sup>1</sup>	
FLOUNDER OR FLUKE	<i>Paralichthys dentatus</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Paralichthys lethostigma</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Paralichthys microps</i>	√ <sup>3</sup>			√ <sup>1</sup>	
	<i>Platichthys flesus</i> <sup>7</sup>	√ <sup>3</sup>			√ <sup>1</sup>	
FLOUNDER, ARROWTOOTH	<i>Reinhardtius hippoglossoides</i>	√ <sup>3</sup>				

TABLE 3-2

### POTENTIAL VERTEBRATE SPECIES-RELATED HAZARDS

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MARKET NAMES	LATIN NAMES	HAZARDS				
		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
FLYINGFISH AND ROE	<i>Cypselurus spp.</i>					
	<i>Exocoetus spp.</i>					
	<i>Fodiator acutus</i>					
	<i>Hirundichthys spp.</i>					
	<i>Oxyporbampbus micropterus</i>					
	<i>Parexocoetus brachypterus</i>					
	<i>Prognichthys gibbifrons</i>					
FROG	<i>Rana spp.</i>	√ <sup>5</sup>			√	
GAR	<i>Lepisosteus spp.</i>				√	
GEMFISH	<i>Epimula magistralis</i>					
	<i>Nesiarchus nasutus</i>					
	<i>Lepidocybium flavobrunneum</i>		G	√		
GEMFISH OR BARRACOUTA	<i>Rexea solandri</i>					
	<i>Thyrsites atun</i>					
GEMFISH OR CABALLA	<i>Thyrsites lepidopoides</i>					
GILLBACKER OR GILLEYBAKA <sup>8</sup>	<i>Aspistor parkeri</i>					
GOATFISH	<i>Mulloidichthys spp.</i>					
	<i>Mulloidichthys vanicolensis</i>					
	<i>Mullus auratus</i>					
	<i>Parupeneus spp.</i>					
	<i>Pseudupeneus spp.</i>					
	<i>Upeneichthys lineatus</i>					
	<i>Upeneus spp.</i>					
GOBY	<i>Neogobius melanostomus</i>				√	
GRAYLING	<i>Thymallus arcticus</i>				√	

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		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
GREENBONE	<i>Odax pullus</i> <sup>7</sup>					
GREENLING	<i>Hexagrammos spp.</i>					
GRENADIER	<i>Coryphaenoides spp.</i>					
	<i>Lepidorhynchus denticulatus</i>					
	<i>Macruronus spp</i> <sup>7</sup>					
	<i>Nezumia bairdii</i> <sup>7</sup>					
	<i>Trachyrhynchus spp.</i> <sup>7</sup>					
GROUPER	<i>Anyperodon spp.</i>	√ <sup>3</sup>				
	<i>Caprodon schlegelii</i>	√ <sup>3</sup>				
	<i>Cephalopholis spp.</i>	√ <sup>3</sup>	CFP			
	<i>C. argus</i>	√ <sup>3</sup>	CFP			
	<i>C. miniata</i>	√ <sup>3</sup>	CFP			
	<i>Diplectrum formosum</i>	√ <sup>3</sup>				
	<i>Epinephelus spp.</i>	√ <sup>3</sup>	CFP			
	<i>E. fuscoguttatus</i>	√ <sup>3</sup>	CFP			
	<i>E. lanceolatus</i>	√ <sup>3</sup>	CFP			
	<i>E. morio</i>	√ <sup>3</sup>	CFP			
	<i>Mycteroperca spp.</i>	√ <sup>3</sup>	CFP			
	<i>M. venenosa</i>	√ <sup>3</sup>	CFP			
	<i>M. bonaci</i>	√ <sup>3</sup>	CFP			
	<i>Variola spp.</i>	√ <sup>3</sup>	CFP			
<i>Variola louti</i>	√ <sup>3</sup>	CFP				
GROUPER OR CORAL GROUPER	<i>Plectropomus spp.</i>	√ <sup>3</sup>	CFP			
GROUPER OR GAG	<i>Mycteroperca microlepis</i>	√ <sup>3</sup>	CFP			
GROUPER OR HIND	<i>Epinephelus guttatus</i>	√ <sup>3</sup>	CFP			
GROUPER OR JEWFISH	<i>Epinephelus itajara</i>	√ <sup>3</sup>				
GRUNION	<i>Leuresthes tenuis</i>					

TABLE 3-2

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MARKET NAMES	LATIN NAMES	HAZARDS				
		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
GRUNT	<i>Anisotremus interruptus</i>					
	<i>Conodon nobilis</i>					
	<i>Haemulon spp.</i>					
	<i>Orthopristis chrysoptera</i>					
	<i>Pomadasys croco</i>					
GRUNT OR CATALINA	<i>Anisotremus taeniatus</i>					
GRUNT OR MARGATE	<i>Haemulon album</i>					
	<i>Anisotremus surinamensis</i> <sup>7</sup>					
GRUNT OR SWEETLIPS	<i>Plectorbinchus spp.</i>					
HADDOCK	<i>Melanogrammus aeglefinus</i>					
HAKE	<i>Urophycis spp.</i>					
HALIBUT	<i>Hippoglossus spp.</i>	√ <sup>3</sup>				
HALIBUT, AQUACULTURED	<i>Hippoglossus spp.</i>	√ <sup>3,4</sup>			√	√
HALIBUT OR CALIFORNIA HALIBUT	<i>Paralichthys californicus</i>	√ <sup>3</sup>				
HAMLET, MUTTON	<i>Alpbastes afer</i> <sup>7</sup>					
HERRING	<i>Etrumeus teres</i>	√ <sup>3</sup>		√	√	
	<i>Harengula tbrissina</i>	√ <sup>3</sup>		√	√	
	<i>Ilisba spp.</i>	√ <sup>3</sup>		√	√	
	<i>Opisthopterus tardoore</i>	√ <sup>3</sup>		√	√	
	<i>Pellona ditchela</i>	√ <sup>3</sup>		√	√	
	<i>Alosa spp.</i>	√ <sup>3</sup>		√	√	
HERRING OR SEA HERRING OR SILD	<i>Clupea spp.</i>	√ <sup>3</sup>		√		

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		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
HERRING OR SEA HERRING OR SILD ROE	<i>Clupea spp.</i>	√ <sup>3</sup>				
HERRING, THREAD	<i>Opisthonema spp.</i>			√	√	
HIND	<i>Epinephelus guttatus</i>	√ <sup>3</sup>	CFP			
	<i>Epinephelus adscensionis</i>	√ <sup>3</sup>	CFP			
	<i>Epinephelus drummondhayi</i>	√ <sup>3</sup>				
HOGFISH	<i>Lachnolaimus maximus</i>	√ <sup>3</sup>	CFP			
HORSE MACKEREL OR SCAD	<i>Trachurus trachurus</i>	√ <sup>3</sup>		√		
JACK	<i>Caranx spp.</i>	√ <sup>3</sup>	CFP	√		
	<i>C. ignobilis</i>	√ <sup>3</sup>	CFP	√		
	<i>C. melampygus</i>	√ <sup>3</sup>	CFP	√		
	<i>C. latus</i>	√ <sup>3</sup>	CFP	√		
	<i>C. lugubris</i>	√ <sup>3</sup>	CFP	√		
	<i>C. ruber</i>	√ <sup>3</sup>	CFP	√		
	<i>Carangoides bartholomaei</i>	√ <sup>3</sup>	CFP	√		
	<i>Oligoplites saurus</i>	√ <sup>3</sup>		√		
	<i>Selene spp.</i>	√ <sup>3</sup>		√		
	<i>Seriola rivoliana</i>	√ <sup>3</sup>	CFP	√		
<i>Urapsis secunda</i>	√ <sup>3</sup>		√			
JACK OR BLUE RUNNER	<i>Caranx crysos</i>	√ <sup>3</sup>	CFP	√		
JACK OR CREVALLE	<i>Alectis indicus</i> <sup>7</sup>	√ <sup>3</sup>		√		
JACK OR RAINBOW RUNNER	<i>Elagatis bipinnulata</i>	√ <sup>3</sup>	CFP	√		
JACK OR ROOSTERFISH	<i>Nematistius pectoralis</i>	√ <sup>3</sup>		√		



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MARKET NAMES	LATIN NAMES	HAZARDS				
		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
JOBFISH	<i>Apbareus spp.</i>	√ <sup>3</sup>	CFP			
	<i>Aprion spp.</i>	√ <sup>3</sup>	CFP			
	<i>Pristipomoides spp.</i>	√ <sup>3</sup>	CFP			
KAHAWAI	<i>Arripis spp.</i>	√ <sup>3</sup>		√		
KINGFISH <sup>6</sup>	<i>Menticirrbus spp.</i>					
KINGKLIP	<i>Genypterus spp.</i>					
LADYFISH	<i>Elops spp.</i>					
LING	<i>Molva spp.</i>					
LING, MEDITERRANEAN	<i>Molva macrophthalma</i> <sup>7</sup>					
LINGCOD	<i>Opiodon elongatus</i>					
LIZARDFISH	<i>Synodus spp.</i>					
LOACH	<i>Somileptus gongota</i>					
LUMPFISH ROE	<i>Cyclopterus lumpus</i>					
MACKEREL	<i>Gasterochisma melampus</i>	√ <sup>3</sup>		√		
	<i>Grammatorcymus spp.</i>	√ <sup>3</sup>		√		
	<i>Rastrelliger kanagurta</i>	√ <sup>3</sup>		√		
	<i>Scomber scombrus</i>	√ <sup>3</sup>		√		
MACKEREL, ATKA	<i>Pleurogrammus monopterygius</i>	√ <sup>3</sup>				
MACKEREL, CHUB	<i>Scomber spp.</i>	√ <sup>3</sup>		√		
MACKEREL, JACK	<i>Trachurus spp.</i>	√ <sup>3</sup>		√		
MACKEREL, SPANISH	<i>Scomberomorus spp.</i>	√ <sup>3</sup>		√		

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		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
MACKEREL, NARROW-BARRED SPANISH	<i>Scomberomorus commerson</i>		CFP	√		
MACKEREL, SPANISH OR KING	<i>Scomberomorus cavalla</i>	√ <sup>3</sup>	CFP	√		
MAHI-MAHI	<i>Coryphaena spp.</i>			√		
MAHI-MAHI, AQUACULTURED	<i>Coryphaena spp.</i>			√	√	√
MARLIN	<i>Makaira spp.</i>			√		
	<i>Tetrapturus spp.</i>			√		
MENHADEN	<i>Brevoortia spp.</i>			√ <sup>9</sup>	√ <sup>10</sup>	
	<i>Ethmidium maculatum</i>			√ <sup>9</sup>	√ <sup>10</sup>	
MILKFISH	<i>Chanos chanos</i>				√	
MILKFISH, AQUACULTURED	<i>Chanos chanos</i>				√	√
MONKFISH	<i>Lopbius spp.</i>	√ <sup>3</sup>				
MORWONG	<i>Aplodactylus arctidens</i> <sup>7</sup>					
	<i>Cheilodactylus spp.</i>					
	<i>Goniistius spp.</i>					
	<i>Nemadactylus spp.</i>					
MULLET	<i>Agonostomus monticola</i>	√ <sup>3</sup>			√	
	<i>Aldrichetta forsteri</i>	√ <sup>3</sup>			√	
	<i>Crenimugil crenilabis</i>	√ <sup>3</sup>			√	
	<i>Mugil spp.</i>	√ <sup>3</sup>			√	
	<i>Mullus spp.</i>	√ <sup>3</sup>			√	
	<i>Mugil cephalus</i> <sup>7</sup>	√ <sup>3</sup>			√	
	<i>Mugil thoburni</i>	√ <sup>3</sup>			√	
MUSKELLUNGE	<i>Esox masquinongy</i>				√	

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		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
OPAH	<i>Lampris guttatus</i>					
OPALEYE	<i>Girella nigricans</i>					
OREO DORY	<i>Allocyttus niger</i>					
	<i>Neocyttus spp.</i>					
	<i>Pseudocyttus spp.</i>					
OSCAR	<i>Astronotus ocellatus</i>				√	
OSCAR, AQUACULTURED	<i>Astronotus ocellatus</i>				√	√
PACU	<i>Myleus pacu</i>					
PADDLEFISH AND ROE	<i>Polyodon spp.</i>				√	
PADDLEFISH AND ROE, AQUACULTURED	<i>Polyodon spp.</i>				√	√
PANGASIUS, GIANT <sup>8</sup>	<i>Pangasius gigas</i>				√	
PANGASIUS SHORTBARBEL <sup>8</sup>	<i>Pangasius micronemus</i>				√	
PARROTFISH	<i>Scarus spp.</i>		CFP <sup>2</sup>			
	<i>Bolbometopon spp.</i>					
PATAGONIAN TOOTHFISH OR CHILEAN SEA BASS	<i>Dissostichus eleginoides</i> <sup>7</sup>	√ <sup>3</sup>				
PERCH	<i>Hermosilla azurea</i>				√	
	<i>Perca fluviatilis</i>				√	
PERCH, LAKE OR YELLOW	<i>Perca flavescens</i>				√	
PERCH, NILE	<i>Lates niloticus</i>				√	
PERCH, NILE, AQUACULTURED	<i>Lates niloticus</i>				√	√

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		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
PERCH, OCEAN	<i>Sebastes spp.</i>	√ <sup>3</sup>				
PERCH, PILE	<i>Rbacochilus vacca</i>				√	
PERCH, SILVER	<i>Bairdiella chrysoura</i>				√	
PERCH, WHITE	<i>Morone americana</i>				√	
PICAREL	<i>Spicara maena</i>				√	
PICKEREL	<i>Esox spp.</i>				√	
PIKE	<i>Esox lucius</i>				√	
PILCHARD OR SARDINE	<i>Sardina pilchardus</i>			√		
	<i>Sardinops spp.</i>			√		
PIRAMUTABA OR LAULAO FISH <sup>a</sup>	<i>Brachyplatystoma vaillantii</i>				√	
PLAICE	<i>Hippoglossoides platessoides</i>	√ <sup>3</sup>				
	<i>Pleuronectes platessa</i>	√ <sup>3</sup>				
	<i>Pleuronectes quadrituberculatus</i>	√ <sup>3</sup>				
POLLOCK	<i>Pollachius pollachius</i>	√ <sup>3</sup>				
	<i>Pollachius virens</i>	√ <sup>3</sup>				
POLLOCK OR ALASKA POLLOCK	<i>Theragra chalcogramma</i>	√ <sup>3</sup>				
POMFRET	<i>Brama spp.</i>					
	<i>Parastromateus spp.</i>					
	<i>Taractes rubescens</i>					
POMPANO	<i>Alectis ciliaris</i>		CFP			
	<i>Parastromateus niger</i>					
	<i>Trachinotus spp.</i>					
POMPANO OR PERMIT	<i>Trachinotus kennedyi</i>					
	<i>Trachinotus falcatus</i>					

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		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
POMPANO OR POMPANITO	<i>Trachinotus rhodopus</i>					
PORGY	<i>Calamus spp.</i>					
	<i>Chrysophrys auratus</i>					
	<i>Dentex spp.</i>					
	<i>Diplodus spp.</i>					
	<i>Lagodon rhomboides</i>					
	<i>Pagrus spp.</i>					
	<i>Pterogymnus laniarius</i>					
PORGY OR SCUP	<i>Stenotomus caprinus</i>					
	<i>Stenotomus chrysops</i>					
PUFFER	<i>Arothron spp.</i>		T, PSP			
	<i>Lagocephalus spp.</i>		T, PSP			
	<i>Sphoeroides annulatus</i>		T, PSP			
	<i>Sphoeroides nebelus</i>		T, PSP			
	<i>Sphoeroides maculatus</i>		T, PSP			
	<i>Sphoeroides spengleri</i>		T, PSP			
	<i>Sphoeroides testudineus</i>		T, PSP			
	<i>Takifugu spp.</i> <sup>7</sup>		T, PSP			
<i>Tetraodon spp.</i>		T, PSP				
PUFFER, AQUACULTURED	<i>Takifugu spp.</i> <sup>7</sup>		T, PSP		√	√
RACEHORSE	<i>Congiopodus leucopaecilus</i>					
RITA	<i>Rita rita</i>					
ROCKFISH	<i>Scorpaena papillosus</i>	√ <sup>3</sup>				
	<i>Scorpaena cardinalis</i>	√ <sup>3</sup>				
	<i>Sebastes spp.</i>	√ <sup>3</sup>				
ROCKLING	<i>Ciliata spp.</i>					
	<i>Enchelyopus cimbrius</i>					
ROHU	<i>Labeo rohita</i>				√	

TABLE 3-2

### POTENTIAL VERTEBRATE SPECIES-RELATED HAZARDS

Note: You should identify pathogens from the harvest area as a potential species-related hazard if you know or have reason to know that the fish will be consumed without a process sufficient to kill pathogens, or if you represent, label, or intend for the product to be so consumed. (See Chapter 4 for guidance on controlling pathogens from the harvest area.)

MARKET NAMES	LATIN NAMES	HAZARDS				
		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
ROSEFISH	<i>Helicolenus dactylopterus</i>					
ROUGHY	<i>Paratrachichthys trailli</i>					
ROUGHY, ORANGE	<i>Hoplostethus atlanticus</i>					
ROUGHY, SILVER	<i>Hoplostethus mediterraneus mediterraneus</i> <sup>7</sup>					
SABLEFISH	<i>Anoplopoma fimbria</i>	√ <sup>3</sup>				
SAILFISH	<i>Istiophorus platypterus</i>			√		
SALMON AND ROE, AQUACULTURED	<i>Oncorhynchus spp.</i>	√ <sup>3,4</sup>			√	√
	<i>Salmo salar</i>	√ <sup>3,4</sup>			√	√
SALMON AND ROE (WILD)(FRESHWATER)	<i>Oncorhynchus spp.</i>	√ <sup>3</sup>			√	
	<i>Salmo salar</i>	√ <sup>3</sup>			√	
SALMON AND ROE, (WILD) (OCEAN)	<i>Oncorhynchus spp.</i>	√ <sup>3</sup>				
	<i>Salmo salar</i>	√ <sup>3</sup>				
SANDDAB	<i>Citharichthys sordidus</i>				√	
SANDPERCH	<i>Mugiloides chilensis</i>					
	<i>Paraperca spp.</i>					
SARDINE	<i>Harengula spp.</i>			√		
	<i>Sardinella spp.</i>			√		
SAUGER	<i>Atule mate</i> <sup>7</sup>					
SAURY	<i>Cololabis saira</i>			√		
	<i>Scomberesox saurus</i>			√		
SCAD	<i>Atule mate</i> <sup>7</sup>	√ <sup>3</sup>				
	<i>Decapterus spp.</i>	√ <sup>3</sup>				
	<i>Selar crumenophthalmus</i>	√ <sup>3</sup>				
	<i>Trachurus spp.</i>	√ <sup>3</sup>		√		
SCAD OR HORSE MACKEREL	<i>Trachurus trachurus</i>	√ <sup>3</sup>		√		

TABLE 3-2

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MARKET NAMES	LATIN NAMES	HAZARDS				
		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
SCULPIN	<i>Hemitripterus americanus</i>					
	<i>Myoxocephalus polyacanthocephalus</i>					
	<i>Scorpaenichthys marmoratus</i>					
SEA BREAM	<i>Arcosargus rhomboidalis</i>					
	<i>Chrysophrys auratus</i> <sup>7</sup>					
	<i>Pagellus spp.</i>					
SEAROBIN	<i>Chelidonichthys spp.</i>					
	<i>Peristedion miniatum</i>					
	<i>Prionotus carolinus</i>					
	<i>Pterygotrigla picta</i>					
SEATROUT	<i>Cynoscion spp.</i>	√ <sup>3</sup>				
SHAD	<i>Alosa spp.</i>			√	√	
SHAD ROE	<i>Alosa spp.</i>				√	
SHAD, GIZZARD	<i>Dorosoma spp.</i>			√	√	
	<i>Nematalosa vlaminghi</i>			√	√	
SHAD, HILSA	<i>Tenualosa ilisba</i>			√		
SHARK	<i>Carcharbinus spp.</i>					
	<i>Cetorbinus maximus</i>					
	<i>Galeocерdo cuvier</i>					
	<i>Galeorbinus spp.</i>					
	<i>Hexanchus griseus</i>					
	<i>Lamna ditropis</i>					
	<i>Negaprion brevirostris</i>					
	<i>Notorynchus cepedianus</i>					
	<i>Prionace glauca</i>					
	<i>Sphyrna spp.</i>					
	<i>Triaenodon obesus</i>					
<i>Triakis semifasciata</i>						

TABLE 3-2

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MARKET NAMES	LATIN NAMES	HAZARDS				
		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
SHARK OR PORBEAGLE	<i>Lamna nasus</i>					
SHARK OR SMOOTHHOUND	<i>Mustelus spp.</i>					
SHARK, ANGEL	<i>Squatina spp.</i>					
SHARK, DOGFISH OR CAPE SHARK	<i>Centrophorus spp.</i>					
	<i>Mustelus spp.</i>					
	<i>Scyliorhinus spp.</i>					
	<i>Squalus spp.</i>					
SHARK, MAKO	<i>Isurus spp.</i>					
SHARK, THRESHER	<i>Alopias spp.</i>					
SHEEPHEAD	<i>Semicossyphus pulcher</i>				√	
	<i>Archosargus probatocephalus</i>				√	
SHINER	<i>Notropis spp.</i>				√	
SILVERSIDE	<i>Atherinops spp.</i>				√	
	<i>Basilichthys australis</i>				√	
	<i>Menidia menidia</i>				√	
SKATE	<i>Bathyraja spp.</i>				√	
	<i>Raja spp.</i>				√	
SKILLFISH	<i>Erilepis zonifer</i>					
SMELT	<i>Allosmerus elongatus</i>				√	
	<i>Argentina spp.</i>				√	
	<i>Hypomesus spp.</i>				√	
	<i>Osmerus spp.</i>				√	
	<i>Plecoglossus altivelis altivelis</i> <sup>7</sup>				√	
	<i>Retropinna retropinna</i>				√	
	<i>Spirinchus spp.</i>				√	
	<i>Thaleichthys pacificus</i>				√	



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MARKET NAMES	LATIN NAMES	HAZARDS				
		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
SNAKEHEAD	<i>Channa striata</i>					
	<i>Parachanna obscura</i> <sup>7</sup>					
SNAPPER	<i>Apsilus dentatus</i>					
	<i>Etelis spp.</i>					
	<i>Lutjanus spp.</i>		CFP			
	<i>L. bohar</i>		CFP			
	<i>L. gibbus</i>		CFP			
	<i>L. sebae</i>		CFP			
	<i>L. buccanella</i>		CFP			
	<i>L. cyanopterus</i>		CFP			
	<i>L. jocu</i>		CFP			
	<i>Symphorus nematophorus</i>		CFP			
	<i>Macolor spp.</i>					
	<i>Ocyurus chrysurus</i>					
	<i>Pristipomoides spp.</i>	√ <sup>3</sup>				
	<i>Rhomboplites aurorubens</i>					
<i>Symphorichthys spilurus</i>						
SNOOK	<i>Centropomus spp.</i>				√	

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		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
SOLE OR FLOUNDER	<i>Aseraggodes spp.</i>	√ <sup>3</sup>				
	<i>Austroglossus spp.</i>	√ <sup>3</sup>				
	<i>Buglossidium luteum</i>	√ <sup>3</sup>				
	<i>Clidoderma asperrimum</i>	√ <sup>3</sup>				
	<i>Embassichthys bathybius</i>	√ <sup>3</sup>				
	<i>Lyopsetta exilis</i> <sup>7</sup>	√ <sup>3</sup>				
	<i>Eopsetta jordani</i>	√ <sup>3</sup>				
	<i>Glyptocephalus zachirus</i> <sup>7</sup>	√ <sup>3</sup>				
	<i>Glyptocephalus spp.</i>	√ <sup>3</sup>				
	<i>Gymnachirus melas</i>	√ <sup>3</sup>				
	<i>Hippoglossina spp.</i>	√ <sup>3</sup>				
	<i>Lepidopsetta bilineata</i>	√ <sup>3</sup>				
	<i>Microchirus spp.</i>	√ <sup>3</sup>				
	<i>Microstomus kitt</i>	√ <sup>3</sup>				
	<i>Microstomus pacificus</i>	√ <sup>3</sup>				
	<i>Pseudopleuronectes americanus</i> <sup>7</sup>	√ <sup>3</sup>				
	<i>Parophrys vetulus</i> <sup>7</sup>	√ <sup>3</sup>				
	<i>Psettichthys melanostictus</i>	√ <sup>3</sup>				
	<i>Solea solea</i> <sup>7</sup>	√ <sup>3</sup>				
	<i>Brachirus orientalis</i> <sup>7</sup>	√ <sup>3</sup>				
<i>Trinectes spp.</i>	√ <sup>3</sup>					
<i>Xystreurus liolepis</i>	√ <sup>3</sup>					

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		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
SOLE OR FLOUNDER, AQUACULTURED	<i>Aseraggodes spp.</i>	√ <sup>3,4</sup>			√	√
	<i>Austroglossus spp.</i>	√ <sup>3,4</sup>			√	√
	<i>Buglossidium luteum</i>	√ <sup>3,4</sup>			√	√
	<i>Clidoderma asperrimum</i>	√ <sup>3,4</sup>			√	√
	<i>Embassichthys bathybius</i>	√ <sup>3,4</sup>			√	√
	<i>Lyopsetta exilis</i> <sup>7</sup>	√ <sup>3,4</sup>			√	√
	<i>Eopsetta jordani</i>	√ <sup>3,4</sup>			√	√
	<i>Glyptocephalus zachirus</i> <sup>7</sup>	√ <sup>3,4</sup>			√	√
	<i>Glyptocephalus spp.</i>	√ <sup>3,4</sup>			√	√
	<i>Gymnachirus melas</i>	√ <sup>3,4</sup>			√	√
	<i>Hippoglossina spp.</i>	√ <sup>3,4</sup>			√	√
	<i>Lepidopsetta bilineata</i>	√ <sup>3,4</sup>			√	√
	<i>Microchirus spp.</i>	√ <sup>3,4</sup>			√	√
	<i>Pseudopleuronectes americanus</i> <sup>7</sup>	√ <sup>3,4</sup>			√	√
	<i>Paropbrys vetulus</i> <sup>7</sup>	√ <sup>3,4</sup>			√	√
	<i>Psettichthys melanostictus</i>	√ <sup>3,4</sup>			√	√
	<i>Solea solea</i> <sup>7</sup>	√ <sup>3,4</sup>			√	√
	<i>Brachirus orientalis</i> <sup>7</sup>	√ <sup>3,4</sup>			√	√
<i>Trinectes spp.</i>	√ <sup>3,4</sup>			√	√	
<i>Xystreuryx liolepis</i>	√ <sup>3,4</sup>			√	√	
SORUBIM OR SURUBI <sup>8</sup>	<i>Pseudoplatystoma corruscans</i>				√	
SPADEFISH	<i>Chaetodipterus spp.</i>					
SPEARFISH	<i>Tetrapturus spp.</i>			√		
SPOT	<i>Leiostomus xanthurus</i>				√	
SPRAT OR BRISTLING	<i>Sprattus spp.</i>	√ <sup>3</sup>		√		

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MARKET NAMES	LATIN NAMES	HAZARDS				
		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
SQUIRRELFISH	<i>Holocentrus spp.</i>					
	<i>Myripristis spp.</i>					
	<i>Sargocentron spp.</i>					
STURGEON AND ROE	<i>Acipenser spp.</i>				√	
	<i>Huso huso</i>				√	
	<i>Pseudoscaphirhynchus spp.</i>				√	
	<i>Scaphirhynchus spp.</i>				√	
STURGEON AND ROE, AQUACULTURED	<i>Acipenser spp.</i>				√	√
	<i>Huso huso</i>				√	√
	<i>Pseudoscaphirhynchus spp.</i>				√	√
	<i>Scaphirhynchus spp.</i>				√	√
SUCKER	<i>Carpiodes spp.</i>				√	
	<i>Catostomus commersonii</i>				√	
	<i>Cycleptus elongatus</i>				√	
SUCKER OR REDHORSE	<i>Moxostoma macrolepidotum</i>				√	
SUNFISH (NOT MOLA MOLA)	<i>Archoplites interruptus</i>				√	
	<i>Lepomis spp.</i>				√	
SURFPERCH	<i>Amphistichus spp.</i>				√	
	<i>Cymatogaster aggregata</i>				√	
	<i>Embiotoca spp.</i>				√	
	<i>Hyperprosopon argenteum</i>				√	
	<i>Rbacochilus toxotes</i>				√	
SUTCHI OR SWAI <sup>8</sup>	<i>Pangasius hypophthalmus</i>				√	
SUTCHI OR SWAI <sup>8</sup> , AQUACULTURED	<i>Pangasius hypophthalmus</i>				√	√
SWORDFISH	<i>Xiphias gladius</i>					

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		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
TANG	<i>Acanthurus spp.</i>		CFP <sup>2</sup>			
	<i>Ctenochaetus spp.</i>		CFP <sup>2</sup>			
	<i>Naso spp.</i>		CFP <sup>2</sup>			
	<i>Zebrasoma spp.</i>					
TARPON	<i>Megalops atlanticus</i>				√	
TAUTOG	<i>Tautoga onitis</i>				√	
THORNYHEAD	<i>Sebastolobus spp.</i>	√ <sup>3</sup>			√	
THREADFIN	<i>Eleutheronema tetradactylum</i>					
	<i>Galeoides decadactylus</i>					
	<i>Gnathanodon spp.</i> <i>Polydactylus spp.</i>					
	<i>Polynemus spp.</i>					
TIGERFISH	<i>Datnioides microlepis</i>				√	
	<i>Datnioides polota</i>				√	
TILAPIA	<i>Tilapia spp.</i>				√	
	<i>Oreochromis spp.</i>				√	
	<i>Sarotherodon spp.</i>				√	
TILAPIA, AQUACULTURED	<i>Oreochromis spp.</i>				√	√
	<i>Sarotherodon spp.</i>				√	√
	<i>Tilapia spp.</i>				√	√
TILEFISH	<i>Caulolatilus spp.</i>					
	<i>Lopholatilus chamaeleonticeps</i>					
	<i>Malacantibus plumieri</i>					
	<i>Prolatilus jugularis</i>					
TINFOIL	<i>Barbonymus altus</i>					
TOMCOD	<i>Microgadus spp.</i>	√ <sup>3</sup>				
TONGUESOLE	<i>Cynoglossus spp.</i>	√ <sup>3</sup>				
TRAHIRA	<i>Hoplias malabaricus</i>					

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		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
TREVALLY	<i>Caranx spp.</i>	√ <sup>3</sup>	CFP	√		
TRIGGERFISH	<i>Balistes spp.</i>		CFP			
	<i>Cantbidermis sufflamen</i>					
	<i>Melichthys niger</i>					
	<i>Navodon spp.</i>					
TRIPLETAIL	<i>Datnioides quadrifasciatus</i>					
	<i>Lobotes spp.</i>					
TROUT, AQUACULTURED	<i>Oncorhynchus mykiss aguabonita</i>				√	√
	<i>Oncorhynchus clarkii</i>				√	√
	<i>Oncorhynchus gilae</i>				√	√
	<i>Oncorhynchus mykiss</i>				√	√
	<i>Salmo trutta</i>				√	√
	<i>Salvelinus fontinalis</i>				√	√
	<i>Salvelinus malma</i>				√	√
	<i>Salvelinus namaycush</i>				√	√
	<i>Stenodus leucichthys</i>				√	√
TROUT, RAINBOW OR STEELHEAD	<i>Oncorhynchus mykiss</i>	√ <sup>3</sup>				
TRUMPETER	<i>Latridopsis spp.</i>				√	
	<i>Latris lineata</i>				√	
TUNA (SMALL)	<i>Allotbunmus fallai</i>	√ <sup>3</sup>		√		
	<i>Auxis spp.</i>	√ <sup>3</sup>		√		
	<i>Euthynnus spp.</i>	√ <sup>3</sup>		√		
	<i>Katsuwonus pelamis</i>	√ <sup>3</sup>		√		
	<i>Thunnus tonggol</i>	√ <sup>3</sup>		√		
TUNA (LARGE)	<i>Thunnus alalunga</i>			√		
	<i>Thunnus albacares</i>			√		
	<i>Thunnus atlanticus</i>			√		
	<i>Thunnus maccoyii</i>			√		
	<i>Thunnus obesus</i>			√		
	<i>Thunnus thynnus</i>			√		

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		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
TUNA, AQUACULTURED	<i>Thunnus spp.</i>	√ <sup>3,4</sup>		√	√	√
TURBOT	<i>Pleuronichthys guttulatus</i> <sup>7</sup>	√ <sup>3</sup>				
	<i>Pleuronichthys spp.</i>	√ <sup>3</sup>				
	<i>Psettodes spp.</i>	√ <sup>3</sup>				
	<i>Reinhardtius hippoglossoides</i>	√ <sup>3</sup>				
	<i>Psetta maxima</i> <sup>7</sup>	√ <sup>3</sup>				
TURBOT, AQUACULTURED	<i>Psetta maxima</i>				√	√
TURTLE	<i>Malaclemys spp.</i> <i>Chelydra spp.</i> <i>Apalone spp.</i> <i>Trachemys spp.</i>				√	
TURTLE, AQUACULTURED	<i>Malaclemys spp.</i> <i>Chelydra spp.</i> <i>Apalone spp.</i> <i>Trachemys spp.</i>				√	√
UNICORNFISH	<i>Naso unicornis</i>					
WAHOO	<i>Acanthocybium solandri</i>			√		
WALLEYE	<i>Sander spp.</i> <sup>7</sup>				√	
WAREHOU	<i>Seriolella spp.</i>					
WEAKFISH	<i>Cynoscion spp.</i>				√	
WEAKFISH OR BANGAMARY	<i>Macrodon ancylodon</i>					
WHISKERED FISH <sup>8</sup>	<i>Arius spp.</i>				√	
WHISKERED FISH OR GAFFTOPSAIL FISH <sup>8</sup>	<i>Bagre marinus</i>				√	
WHISKERED FISH OR HARDHEAD WHISKERED FISH <sup>8</sup>	<i>Ariopsis felis</i>				√	

TABLE 3-2

### POTENTIAL VERTEBRATE SPECIES-RELATED HAZARDS

Note: You should identify pathogens from the harvest area as a potential species-related hazard if you know or have reason to know that the fish will be consumed without a process sufficient to kill pathogens, or if you represent, label, or intend for the product to be so consumed. (See Chapter 4 for guidance on controlling pathogens from the harvest area.)

MARKET NAMES	LATIN NAMES	HAZARDS				
		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11
WHITEFISH	<i>Coregonus spp.</i>				√	
	<i>Prosopium cylindraceum</i>				√	
WHITING	<i>Merluccius gayi</i>					
	<i>Merluccius hubbsi</i>					
	<i>Merluccius merluccius</i>					
WHITING, BLUE	<i>Micromesistius spp.</i>					
WHITING OR PACIFIC WHITING	<i>Merluccius productus</i>					
WHITING, NEW ZEALAND	<i>Macruronus novaezelandiae</i>					
WRASSE	<i>Cheilinus undulatus</i>		CFP			
WOLFFISH	<i>Anarhichas spp.</i>	√ <sup>3</sup>				
YELLOW TAIL OR AMBERJACK	<i>Seriola lalandi</i>			√		
YELLOWTAIL AMBERJACK, AQUACULTURED	<i>Seriola lalandi</i> <sup>7</sup>			√	√	√
ZANDER	<i>Sander lucioperca</i> <sup>7</sup>				√	
ZANDER, AQUACULTURED	<i>Sander lucioperca</i> <sup>7</sup>				√	√



TABLE 3-2

**POTENTIAL VERTEBRATE SPECIES-RELATED HAZARDS**

Note: You should identify pathogens from the harvest area as a potential species-related hazard if you know or have reason to know that the fish will be consumed without a process sufficient to kill pathogens, or if you represent, label, or intend for the product to be so consumed. (See Chapter 4 for guidance on controlling pathogens from the harvest area.)

MARKET NAMES	LATIN NAMES	HAZARDS				
		PARASITES	NATURAL TOXINS	SCOMBROTOXIN (HISTAMINE)	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 5	CHP 6	CHP 7	CHP 9	CHP 11

ASP = Amnesic Shellfish Poisoning; CFP = Ciguatera Fish Poisoning; G = gempylotoxin; PSP = Paralytic Shellfish Poisoning; and T = tetrodotoxin.

1. This hazard does not apply to offshore catch (e.g., areas not subject to shore side contaminant discharges).
2. Indicates that the ciguatera hazard is associated with this species only in the tropical Pacific Ocean.
3. This hazard applies where the processor has knowledge or has reason to know that the parasite-containing fish or fishery product will be consumed without a process sufficient to kill the parasites, or where the processor represents, labels, or intends for the product to be so consumed.
4. This hazard, when caused by consuming infected feed, only applies if fish processing waste, fresh fish, or plankton is used as feed.
5. This hazard only applies if the product is marketed uneviscerated.
6. Amberjack, yellowtail, Spanish mackerel, king mackerel and other scombrototoxin-forming fish are sometimes marketed incorrectly as kingfish.
7. The scientific name for this species has changed since the previous edition of this guidance.
8. The market name for this species has been changed since the previous edition of this guidance.
9. This hazard does not apply to products intended for animal feed or fish oil products, but does apply to products intended for direct human consumption of the muscle and to aqueous components, such as fish protein concentrates that are to be used as food additives.
10. This hazard only applies to food products for human consumption, such as oil extracts used as dietary ingredients.

TABLE 3-3

### POTENTIAL INVERTEBRATE SPECIES-RELATED HAZARDS

Note: You should identify pathogens from the harvest area as a potential species-related hazard if you know, or have reason to know, that the fish will be consumed without a process sufficient to kill pathogens or if you represent, label, or intend for the product to be so consumed. (See Chapter 4 for guidance on controlling pathogens from the harvest area.)

MARKET NAMES	LATIN NAMES	HAZARDS				
		PATHOGENS	PARASITES	NATURAL TOXINS	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 4	CHP 5	CHP 6	CHP 9	CHP 11
ABALONE	<i>Haliotis spp</i>			√	√	
	<i>Marinauris roei</i>				√	
	<i>Haliotis ruber</i>				√	
	<i>Haliotis laevigata</i>				√	
ARKSHELL	<i>Anadara subcrenata</i>	√		√	√	
	<i>Arca spp.</i>	√		√	√	
CLAM, BENTNOSE	<i>Macoma nasuta</i>	√		√	√	
CLAM BUTTER	<i>Saxidomus spp.</i>	√		√	√	
CLAM, CALICO	<i>Macrocallista maculata</i>	√		√	√	
CLAM, GEODUCK	<i>Panopea abrupta</i>	√		√	√	
	<i>Panopea bitruncata</i>	√		√	√	
CLAM, HARD	<i>Arctica islandica</i>	√		√	√	
	<i>Meretrix spp.</i>	√		√	√	
	<i>Venus mortoni</i>	√		√	√	
CLAM, HARDSHELL OR QUAHOG	<i>Protothaca thaca</i>	√		√	√	
	<i>Mercenaria spp.</i>	√		√	√	
CLAM, LITTLENECK	<i>Protothaca staminea</i>	√		√	√	
	<i>Protothaca tenerrima</i>	√		√	√	
	<i>Tapes variegata</i>	√		√	√	
	<i>Tapes virginea</i>	√		√	√	
	<i>Venerupis aurea</i> <sup>4</sup>	√		√	√	
	<i>Venerupis decussata</i> <sup>4</sup>	√		√	√	
	<i>Venerupis philippinarum</i>	√		√	√	
CLAM, MARSH	<i>Corbicula japonica</i>	√		√	√	
CLAM, PISMO	<i>Tivela stultorum</i>	√		√	√	
CLAM, RAZOR	<i>Ensis spp.</i>	√		√	√	
	<i>Siliqua spp.</i>	√		√	√	
	<i>Solen spp.</i>	√		√	√	
	<i>Tagelus spp.</i>	√		√	√	
CLAM, SANGUIN	<i>Sanguinolaria spp.</i>	√		√	√	

TABLE 3-3

### POTENTIAL INVERTEBRATE SPECIES-RELATED HAZARDS

Note: You should identify pathogens from the harvest area as a potential species-related hazard if you know, or have reason to know, that the fish will be consumed without a process sufficient to kill pathogens or if you represent, label, or intend for the product to be so consumed. (See Chapter 4 for guidance on controlling pathogens from the harvest area.)

MARKET NAMES	LATIN NAMES	HAZARDS				
		PATHOGENS	PARASITES	NATURAL TOXINS	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 4	CHP 5	CHP 6	CHP 9	CHP 11
CLAM, SOFTSHELL	<i>Mya arenaria</i>	√		√	√	
CLAM, SURF OR SURFLAM	<i>Mactrellona alata</i>	√		√	√	
	<i>Mactromeris spp.</i>	√		√	√	
	<i>Mactra spp.</i>	√		√	√	
	<i>Mactrotomas spp.</i>	√		√	√	
	<i>Simomactra spp.</i>	√		√	√	
	<i>Spisula spp.</i>	√		√	√	
	<i>Tresus spp.</i>	√		√	√	
CLAM, SURF AQUACULTURED	<i>Mactra schalinensis</i>	√		√	√	
CLAM, VENUS	<i>Chione spp.</i>	√		√	√	
	<i>Chionista spp.</i> <sup>4</sup>	√		√	√	
	<i>Macrocallista nimbosa</i>	√		√	√	
CLAM, WEDGE	<i>Paphies spp.</i>	√		√	√	
COCKLE	<i>Cardium spp.</i>	√		√	√	
	<i>Clinocardium spp.</i>	√		√	√	
	<i>Dinocardium robustum</i>	√		√	√	
	<i>Serripes groenlandicus</i>	√		√	√	
CONCH	<i>Strombus spp.</i>	√		√		
	<i>Lambis lambis</i>	√		√		
COQUINA	<i>Donax spp.</i>	√		√	√	
COQUINA, FALSE	<i>Iphigenia brasiliana</i>	√		√	√	
CRAB, BLUE, AQUACULTURED	<i>Callinectes sapidus</i>				√	√
CRAB, BLUE	<i>Callinectes sapidus</i>				√	
CRAB, BROWN	<i>Chaceon fenneri</i> <sup>4</sup>				√	
CRAB, BROWN KING	<i>Lithodes aequispinus</i> <sup>4</sup>				√	

TABLE 3-3

### POTENTIAL INVERTEBRATE SPECIES-RELATED HAZARDS

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MARKET NAMES	LATIN NAMES	HAZARDS				
		PATHOGENS	PARASITES	NATURAL TOXINS	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 4	CHP 5	CHP 6	CHP 9	CHP 11
CRAB, CENTOLLA	<i>Litbodes antarcticus</i>				√	
	<i>Litbodes murrayi</i>				√	
CRAB, DEEPSEA	<i>Paralomis granulosa</i>				√	
CRAB, DUNGENESS	<i>Cancer magister</i>			√ <sup>2</sup>	√	
CRAB, JAPANESE FRESHWATER	<i>Geothelphusa debaani</i>		√ <sup>1</sup>		√	
CRAB, JONAH	<i>Cancer borealis</i>			√ <sup>2</sup>	√	
CRAB, KING	<i>Paralithodes camtschaticus</i>				√	
	<i>Paralithodes platypus</i>				√	
CRAB, KING OR HANASAKI	<i>Paralithodes brevipes</i>				√	
CRAB, KOREAN OR KEGANI	<i>Erimacrus isenbeckii</i>				√	
CRAB, LITHODES	<i>Neolithodes brodiei</i>				√	
CRAB, RED	<i>Chaceon quinquedens</i> <sup>4</sup>				√	
CRAB, RED ROCK	<i>Cancer productus</i>			√ <sup>2</sup>	√	
CRAB, ROCK	<i>Cancer irroratus</i>				√	
	<i>Cancer pagurus</i>				√	
CRAB, SHEEP	<i>Loxorhynchus grandis</i>				√	
CRAB, SNOW	<i>Chionoecetes angulatus</i>				√	
	<i>Chionoecetes bairdi</i>				√	
	<i>Chionoecetes opilio</i>				√	
	<i>Chionoecetes tanneri</i>				√	
CRAB, SPIDER	<i>Jacquinotia edwardsii</i>				√	
	<i>Maja squinado</i>				√	
CRAB, STONE	<i>Menippe spp.</i> <sup>4</sup>				√	
CRAB, SWAMP	<i>Scylla serrata</i>				√	

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MARKET NAMES	LATIN NAMES	HAZARDS				
		PATHOGENS	PARASITES	NATURAL TOXINS	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 4	CHP 5	CHP 6	CHP 9	CHP 11
CRAB, SWAMP, AQUACULTURED	<i>Scylla serrata</i>				√	√
CRAB, SWIMMING	<i>Callinectes arcuatus</i>				√	
	<i>Callinectes toxotes</i>				√	
	<i>Portunus spp.</i>				√	
CRAWFISH OR CRAYFISH	<i>Cambarus spp.</i>				√	
	<i>Cherax spp.</i>				√	
	<i>Euastacus armatus</i>				√	
	<i>Pacifastacus spp.</i>				√	
	<i>Paranephrops spp.</i>				√	
	<i>Procambarus spp.</i>				√	
	<i>Astacus spp.</i>				√	
CRAWFISH OR CRAYFISH, AQUACULTURED	<i>Cambarus spp.</i>				√	√
	<i>Cherax spp.</i>				√	√
	<i>Euastacus armatus</i>				√	√
	<i>Pacifastacus spp.</i>				√	√
	<i>Paranephrops spp.</i>				√	√
	<i>Procambarus spp.</i>				√	√
	<i>Astacus spp.</i>				√	√
CUTTLEFISH	<i>Sepia spp.</i>					
JELLYFISH	<i>Rhopilema spp.</i>					
KRILL	<i>Euphausia spp.</i>					
	<i>Meganyctiphanes norvegica</i>					
	<i>Thysandoessa inermis</i>					
LANGOSTINO	<i>Cervimunida jobni</i>					
	<i>Munida gregaria</i>					
	<i>Pleuroncodes spp.</i>					

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MARKET NAMES	LATIN NAMES	HAZARDS				
		PATHOGENS	PARASITES	NATURAL TOXINS	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 4	CHP 5	CHP 6	CHP 9	CHP 11
LIMPET	<i>Tectura testudinalis</i> <sup>4</sup>					
	<i>Cellana denticulata</i>					
	<i>Diodora aspera</i>					
	<i>Fissurella maxima</i>					
	<i>Lottia gigantea</i>					
	<i>Patella caerulea</i>					
LOBSTER	<i>Homarus spp.</i>					√ <sup>3</sup>
LOBSTER, NORWAY	<i>Nephrops norvegicus</i>					
LOBSTER, ROCK	<i>Jasus spp.</i>					
LOBSTER, ROCK OR SPINY	<i>Palinurus spp.</i>					
	<i>Panulirus spp.</i>					
LOBSTER, SLIPPER	<i>Ibacus ciliatus</i>					
	<i>Scyllarides spp.</i>					
	<i>Thenus orientalis</i>					
LOBSTERETTE	<i>Metanephrops spp.</i>					
	<i>Nephropsis aculeata</i>					
MUREX OR MEREX	<i>Murex brandaris</i>					
MUSSEL	<i>Modiolus spp.</i>	√		√	√	
	<i>Mytilus spp.</i>	√		√	√	
	<i>Perna canaliculus</i>	√		√	√	
OCTOPUS	<i>Eledone spp.</i>		√ <sup>1</sup>			
	<i>Octopus spp.</i>		√ <sup>1</sup>			
OYSTER	<i>Crassostrea spp.</i>	√		√	√	
	<i>Ostrea spp.</i>	√		√	√	
	<i>Spondylus spp.</i>	√		√	√	
	<i>Tiostrea spp.</i>	√		√	√	
PEN SHELL	<i>Atrina pectinata</i>	√		√	√	
PERIWINKLE	<i>Littorina littorea</i>					

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MARKET NAMES	LATIN NAMES	HAZARDS				
		PATHOGENS	PARASITES	NATURAL TOXINS	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 4	CHP 5	CHP 6	CHP 9	CHP 11
SCALLOP	<i>Aequipecten spp.</i>	√ <sup>2</sup>		√ <sup>2</sup>	√	
	<i>Amusium spp.</i>	√ <sup>2</sup>		√ <sup>2</sup>	√	
	<i>Argopecten nucleus</i>	√ <sup>2</sup>		√ <sup>2</sup>	√	
	<i>Chlamys spp.</i>	√ <sup>2</sup>		√ <sup>2</sup>	√	
	<i>Euvola spp.</i> <sup>4</sup>	√ <sup>2</sup>		√ <sup>2</sup>	√	
	<i>Patinopecten yessoensis</i>	√ <sup>2</sup>		√ <sup>2</sup>	√	
	<i>Pecten spp.</i>	√ <sup>2</sup>		√ <sup>2</sup>	√	
	<i>Placopecten magellanicus</i>	√ <sup>2</sup>		√ <sup>2</sup>	√	
SCALLOP AQUACULTURED	<i>Aequipecten spp.</i>	√ <sup>2</sup>		√ <sup>2</sup>	√	
	<i>Amusium spp.</i>	√ <sup>2</sup>		√ <sup>2</sup>	√	
	<i>Argopecten nucleus</i>	√ <sup>2</sup>		√ <sup>2</sup>	√	
	<i>Chlamys spp.</i>	√ <sup>2</sup>		√ <sup>2</sup>	√	
	<i>Euvola spp.</i> <sup>4</sup>	√ <sup>2</sup>		√ <sup>2</sup>	√	
	<i>Patinopecten yessoensis</i>	√ <sup>2</sup>		√ <sup>2</sup>	√	
	<i>Pecten spp.</i>	√ <sup>2</sup>		√ <sup>2</sup>	√	
	<i>Placopecten magellanicus</i>	√ <sup>2</sup>		√ <sup>2</sup>	√	
SCALLOP OR BAY SCALLOP	<i>Argopecten irradians</i>	√ <sup>2</sup>		√ <sup>2</sup>	√	
SCALLOP, CALICO	<i>Argopecten gibbus</i>	√ <sup>2</sup>		√ <sup>2</sup>	√	
SCALLOP OR WEATHERVANE	<i>Patinopecten caurinus</i>	√ <sup>2</sup>		√ <sup>2</sup>	√	
SEA CUCUMBER	<i>Cucumaria spp.</i>				√	
	<i>Holothuria spp.</i>				√	
	<i>Parastichopus spp.</i>				√	
	<i>Stichopus spp.</i>				√	
SEA URCHIN ROE	<i>Echinus esculentus</i>				√	
	<i>Evechinus chloroticus</i>				√	
	<i>Heliocidaris spp.</i>				√	
	<i>Loxechimus spp.</i>				√	
	<i>Paracentrotus spp.</i>				√	
	<i>Pseudocentrotus spp.</i>				√	
	<i>Strongylocentrotus spp.</i>				√	
SEABOB	<i>Xiphopenaeuskroyeri</i>					

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MARKET NAMES	LATIN NAMES	HAZARDS				
		PATHOGENS	PARASITES	NATURAL TOXINS	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 4	CHP 5	CHP 6	CHP 9	CHP 11
SEA SQUIRT	<i>Styela spp.</i>			√		
SHRIMP	<i>Crangon spp.</i>					
	<i>Farfantepenaeus spp.</i> <sup>4</sup>					
	<i>Fenneropenaeus spp.</i> <sup>4</sup>					
	<i>Litopenaeus spp.</i> <sup>4</sup>					
	<i>Marsupenaeus spp.</i> <sup>4</sup>					
	<i>Melicertus spp.</i> <sup>4</sup>					
	<i>Metapenaeus affinis</i>					
	<i>Palaemon serratus</i>					
	<i>Palaemonetes vulgaris</i>					
	<i>Pandalopsis dispar</i>					
	<i>Pandalus spp.</i>					
	<i>Penaeus spp.</i>					
	<i>Pleoticus muelleri</i>					
<i>Plesionika martia</i>						
SHRIMP, AQUACULTURED	<i>Crangon spp.</i>				√	√
	<i>Exopalaemon styliferus</i>				√	√
	<i>Farfantepenaeus spp.</i> <sup>4</sup>				√	√
	<i>Fenneropenaeus spp.</i> <sup>4</sup>				√	√
	<i>Litopenaeus spp.</i> <sup>4</sup>				√	√
	<i>Marsupenaeus spp.</i> <sup>4</sup>				√	√
	<i>Macrobrachium spp.</i>				√	√
	<i>Melicertus spp.</i> <sup>4</sup>				√	√
	<i>Metapenaeus spp.</i>				√	√
	<i>Palaemon serratus</i>				√	√
	<i>Palaemonetes vulgaris</i>				√	√
	<i>Pandalopsis dispar</i>				√	√
	<i>Pandalus spp.</i>				√	√
	<i>Penaeus spp.</i>				√	√
	<i>Plesionika martia</i>				√	√
<i>Crangon spp.</i>				√	√	
SHRIMP, FRESHWATER	<i>Macrobrachium spp.</i>					



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MARKET NAMES	LATIN NAMES	HAZARDS				
		PATHOGENS	PARASITES	NATURAL TOXINS	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 4	CHP 5	CHP 6	CHP 9	CHP 11
SHRIMP, FRESHWATER, AQUACULTURED	<i>Macrobrachium spp.</i>				√	√
SHRIMP, ROCK	<i>Sicyonia brevirostris</i>					
SHRIMP, ROYAL	<i>Pleoticus robustus</i>					
SHRIMP OR PINK SHRIMP	<i>Pandalus borealis</i>					
	<i>Pandalus jordani</i>					
SHRIMP OR PRAWN	<i>Hymenopenaeus sibogae</i>					
SNAIL OR ESCARGOT	<i>Otala spp.</i>				√	
	<i>Helix pomatia</i>				√	
	<i>Achatina fulica</i>		√ <sup>1</sup>			
SNAIL, MOON	<i>Polinices spp.</i>			√		
SQUID	<i>Beryteuthis magister</i>		√ <sup>1</sup>			
	<i>Dosidicus gigas</i>		√ <sup>1</sup>			
	<i>Illex spp.</i>		√ <sup>1</sup>			
	<i>Loligo spp.</i>		√ <sup>1</sup>			
	<i>Loligo media</i> <sup>4</sup>		√ <sup>1</sup>			
	<i>Lolliguncula spp.</i>		√ <sup>1</sup>			
	<i>Nototodarus spp.</i>		√ <sup>1</sup>			
	<i>Ommastrephes spp.</i>		√ <sup>1</sup>			
	<i>Rossia macrosoma</i>		√ <sup>1</sup>			
	<i>Sepioloa rondeleti</i>		√ <sup>1</sup>			
	<i>Sepioteuthis spp.</i>		√ <sup>1</sup>			
<i>Todarodes sagittatus</i>		√ <sup>1</sup>				
TOP SHELL	<i>Turbo cornutus</i>					
	<i>Monodonta turbinata</i> <sup>4</sup>					
WHELK OR SEA SNAIL	<i>Buccinum spp.</i>					
	<i>Busycon spp.</i>			√		
	<i>Neptunea spp.</i>			√ <sup>2</sup>		

TABLE 3-3

**POTENTIAL INVERTEBRATE SPECIES-RELATED HAZARDS**

Note: You should identify pathogens from the harvest area as a potential species-related hazard if you know, or have reason to know, that the fish will be consumed without a process sufficient to kill pathogens or if you represent, label, or intend for the product to be so consumed. (See Chapter 4 for guidance on controlling pathogens from the harvest area.)

MARKET NAMES	LATIN NAMES	HAZARDS				
		PATHOGENS	PARASITES	NATURAL TOXINS	ENVIRONMENTAL CHEMICALS	AQUACULTURE DRUGS
		CHP 4	CHP 5	CHP 6	CHP 9	CHP 11

1. This hazard applies where the processor has knowledge or has reason to know that the parasite-containing fish or fishery product will be consumed without a process sufficient to kill the parasites, or where the processor represents, labels, or intends for the product to be so consumed.
2. This hazard only applies if the product is marketed uneviscerated.
3. This hazard only applies if the lobsters are held in pounds.
4. The scientific name for this species has changed since the last edition of this guidance.

TABLE 3-4

POTENTIAL PROCESS-RELATED HAZARDS											
FINISHED PRODUCT FOOD <sup>1</sup>	PACKAGE TYPE	HAZARDS									
		PATHOGENIC BACTERIA GROWTH - TEMPERATURE ABUSE	C. BOTULINUM TOXIN	S. AUREUS TOXIN - DRYING	S. AUREUS TOXIN - BATTER	PATHOGENIC BACTERIA SURVIVAL THROUGH COOKING OR PASTEURIZATION	PATHOGENIC BACTERIA SURVIVAL THROUGH PROCESSES DESIGNED TO RETAIN RAW PRODUCT CHARACTERISTICS	PATHOGENIC BACTERIA CONTAMINATION AFTER PASTEURIZATION AND SPECIALIZED COOKING PROCESSES	ALLERGENS/ ADDITIVES	METAL INCLUSION	GLASS INCLUSION
		CHP 12	CHP 13	CHP 14	CHP 15	CHP 16	CHP 17	CHP 18	CHP 19	CHP 20	CHP 21
Cooked shrimp, crab, lobster, and other fish, including cooked meat, sections, and whole fish, and surimi-based analog products	Reduced oxygen packaged (e.g., mechanical vacuum, steam flush, hot fill, MAP, CAP, hermetically sealed, or packed in oil)	√	√			√			√	√	
Cooked shrimp, crab, lobster, and other fish, including cooked meat, sections, and whole fish, and surimi-based analog products	Other than reduced oxygen packaged	√				√			√	√	
Pasteurized crab, lobster, and other fish, including pasteurized surimi-based analog products	Reduced oxygen packaged (e.g., mechanical vacuum, steam flush, hot fill, MAP, CAP hermetically sealed, or packed in oil)	√	√			√		√	√	√	
Pasteurized crab, lobster, and other fish, including pasteurized surimi-based analog products	Other than reduced oxygen packaged	√				√		√	√	√	
Smoked fish	Reduced oxygen packaged (e.g., mechanical vacuum, steam flush, hot fill, MAP, CAP, hermetically sealed, or packed in oil)	√	√						√	√	

TABLE 3-4

## POTENTIAL PROCESS-RELATED HAZARDS

FINISHED PRODUCT FOOD <sup>1</sup>	PACKAGE TYPE	HAZARDS									
		PATHOGENIC BACTERIA GROWTH - TEMPERATURE ABUSE	C. BOTULINUM TOXIN	S. AUREUS TOXIN - DRYING	S. AUREUS TOXIN - BATTER	PATHOGENIC BACTERIA SURVIVAL THROUGH COOKING OR PASTEURIZATION	PATHOGENIC BACTERIA SURVIVAL THROUGH PROCESSES DESIGNED TO RETAIN RAW PRODUCT CHARACTERISTICS	PATHOGENIC BACTERIA CONTAMINATION AFTER PASTEURIZATION AND SPECIALIZED COOKING PROCESSES	ALLERGENS/ ADDITIVES	METAL INCLUSION	GLASS INCLUSION
		CHP 12	CHP 13	CHP 14	CHP 15	CHP 16	CHP 17	CHP 18	CHP 19	CHP 20	CHP 21
Smoked fish	Other than reduced oxygen packaged	√							√	√	
Salads, sandwiches, dips, cocktails, and similar seafood products prepared from ready-to-eat fishery products	Reduced oxygen packaged (e.g., mechanical vacuum, steam flush, hot fill, MAP, CAP, hermetically sealed, or packed in oil)	√	√						√	√	√
Salads, sandwiches, dips, cocktails, and similar seafood products prepared from ready-to-eat fishery products	Other than reduced oxygen packaged	√							√	√	√
Battered or breaded (including surface-browned) raw shrimp, finfish, oysters, clams, squid, and other fish	All				√				√	√	
Stuffed crab, shrimp, finfish, and other fish	All	√							√	√	
Dried fish	All	√	√	√					√	√	

TABLE 3-4

## POTENTIAL PROCESS-RELATED HAZARDS

FINISHED PRODUCT FOOD <sup>1</sup>	PACKAGE TYPE	HAZARDS									
		PATHOGENIC BACTERIA GROWTH - TEMPERATURE ABUSE	C. BOTULINUM TOXIN	S. AUREUS TOXIN - DRYING	S. AUREUS TOXIN - BATTER	PATHOGENIC BACTERIA SURVIVAL THROUGH COOKING OR PASTEURIZATION	PATHOGENIC BACTERIA SURVIVAL THROUGH PROCESSES DESIGNED TO RETAIN RAW PRODUCT CHARACTERISTICS	PATHOGENIC BACTERIA CONTAMINATION AFTER PASTEURIZATION AND SPECIALIZED COOKING PROCESSES	ALLERGENS/ ADDITIVES	METAL INCLUSION	GLASS INCLUSION
		CHP 12	CHP 13	CHP 14	CHP 15	CHP 16	CHP 17	CHP 18	CHP 19	CHP 20	CHP 21
Raw oysters, clams, and mussels	Reduced oxygen packaged (e.g., mechanical vacuum, steam flush, hot fill, MAP, CAP, hermetically sealed, or packed in oil)	√	√				√		√	√	√
Raw oysters, clams, and mussels	Other than reduced oxygen packaged	√					√		√	√	√
Raw fish other than oysters, clams, and mussels (finfish and non-finish)	Reduced oxygen packaged (e.g. mechanical vacuum, steam flush, hot fill, MAP, CAP, hermetically sealed, or packed in oil)	√ <sup>2</sup>	√						√	√	
Raw fish other than oysters, clams, and mussels (finfish and non-finish)	Other than reduced oxygen packaged	√ <sup>2</sup>							√	√	
Partially cooked or uncooked prepared foods	Reduced oxygen packaged (e.g., mechanical vacuum, steam flush, hot fill, MAP, CAP, hermetically sealed, or packed in oil)	√	√						√	√	√
Partially cooked or uncooked prepared foods	Other than reduced oxygen packaged	√							√	√	√

TABLE 3-4

POTENTIAL PROCESS-RELATED HAZARDS

FINISHED PRODUCT FOOD <sup>1</sup>	PACKAGE TYPE	HAZARDS									
		PATHOGENIC BACTERIA GROWTH - TEMPERATURE ABUSE	C. BOTULINUM TOXIN	S. AUREUS TOXIN - DRYING	S. AUREUS TOXIN - BATTER	PATHOGENIC BACTERIA SURVIVAL THROUGH COOKING OR PASTEURIZATION	PATHOGENIC BACTERIA SURVIVAL THROUGH PROCESSES DESIGNED TO RETAIN RAW PRODUCT CHARACTERISTICS	PATHOGENIC BACTERIA CONTAMINATION AFTER PASTEURIZATION AND SPECIALIZED COOKING PROCESSES	ALLERGENS/ ADDITIVES	METAL INCLUSION	GLASS INCLUSION
		CHP 12	CHP 13	CHP 14	CHP 15	CHP 16	CHP 17	CHP 18	CHP 19	CHP 20	CHP 21
Fully cooked prepared foods	Reduced oxygen packaged (e.g., mechanical vacuum, steam flush, hot fill, MAP, CAP, hermetically sealed, or packed in oil)	√	√			√			√	√	√
Fully cooked prepared foods	Other than reduced oxygen	√				√			√	√	√
Fermented, acidified, pickled, salted, and LACFs	All	√	√ <sup>3</sup>						√	√	√
Fish oil	All								√ <sup>4</sup>		

C. botulinum = Clostridium botulinum; S. aureus = Staphylococcus aureus; MAP = modified atmosphere packaging; CAP = controlled atmosphere packaging; and LACF = low-acid canned food.

1. You should include potential hazards from more than one finished product food category if your product fits more than one description.
2. This hazard only applies if you have knowledge, or have reason to know, that the fish will be consumed without a process sufficient to kill pathogens or if you represent, label, or intend for the product to be so consumed.
3. Controls for this hazard need not be included in HACCP plans for shelf-stable acidified and LACFs. See Thermally Processed Low-Acid Foods Packaged in Hermetically Sealed Containers regulation (21 CFR 113), called the LACF Regulation in this guidance document, and Acidified Foods regulation (21 CFR 114) for mandatory controls.
4. This hazard does not apply to highly refined fish oil.