SGCN and Habitat Stressors

Level 1 Threat Climate Change and Severe Weather

Level 2 Threat: Habitat Shifting or Alteration

Description: Major changes in habitat composition and location

Species Associated With This Stressor: **Total SGCN: 1: 33 2: 75 3:**

Class ***Actinopterygii*** **(Ray-finned Fishes)** **SGCN Category**

Species: ***Alosa pseudoharengus*** (Alewife) **2**

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Sea level rise could reduce or relocate spawning habitat and truncate or shift species natural range. Liklihood of adjusting to accommodate is low.

Species: ***Anguilla rostrata*** (American Eel) **2**

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Oceanic changes due to climate change may affect migration, spawning and recruitment.

Species: ***Alosa sapidissima*** (American Shad) **1**

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Sea level rise could reduce or relocate spawning habitat and truncate or shift species natural range. Liklihood of adjusting to accommodate is low.

Species: ***Thunnus thynnus*** (Atlantic Bluefin Tuna) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Changes in SST, prey composition and locations may have significant impacts on forage base, location of forage areas, and timing and location of spawning.

Species: ***Gadus morhua*** (Atlantic Cod) **1**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: As a coldwater species, changes in habitat associated with climate change and other environmental variables may limit the ability of the population to reach its potential, and may cause shifts in range or range truncation.. Additionally, while reduced fishing pressure may allow cod stocks to rebuild slightly, changed in habitat associated with climate change and other environmental variables may limit the ability of the population to reach its potential.

Species: ***Salmo salar*** (Atlantic Salmon) **1**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Ocean temperature change causes shifts in Atlantic salmon food sources these shift could affect ocean survival. Spatial extent Ocean migration.

Species: ***Acipenser oxyrinchus*** (Atlantic Sturgeon) **1**

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Climate change could reduce or relocate spawning habitat and truncate or shift species natural range, and result in reduced prey (clams and other calcareous animals).

Species: ***Anarhichas lupus*** (Atlantic Wolffish) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: As a coldwater species, changes in habitat associated with climate change and other environmental variables may limit the ability of the population to reach its potential, and may cause shifts in range or range truncation.

Species: ***Alosa aestivalis*** (Blueback Herring) **1**

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Sea level rise could reduce or relocate spawning habitat and truncate or shift species natural range. Liklihood of adjusting to accommodate is low.

SGCN and Habitat Stressors

Level 1 Threat Climate Change and Severe Weather

Level 2 Threat: Habitat Shifting or Alteration

Class	*Actinopterygii* (Ray-finned Fishes)	SGCN Category
Species: ***Notropis bifrenatus*** (Bridle Shiner)		2
Severity: Moderate Severity	Actionability: Actionable with difficulty	
Notes: Habitat relationships are largely unknown, therefore projected changes due to climate change are unknown.		
Species: ***Brosme brosme*** (Cusk)		2
Severity: Severe	Actionability: Actionable with difficulty	
Notes: As a coldwater species, changes in habitat associated with climate change and other environmental variables may limit the ability of the population to reach its potential, and may cause shifts in range or range truncation.		
Species: ***Melanogrammus aeglefinus*** (Haddock)		1
Severity: Severe	Actionability: Actionable with difficulty	
Notes: As a coldwater species, changes in habitat associated with climate change and other environmental variables may limit the ability of the population to reach its potential, and may cause shifts in range or range truncation. Additionally, While reduced fishing pressure may allow cod stocks to rebuild slightly, changed in habitat associated with climate change and other environmental variables may limit the ability of the population to reach its potential.		
Species: ***Osmerus mordax*** (Rainbow Smelt)		1
Severity: Moderate Severity	Actionability: Actionable with difficulty	
Notes: Sea level rise could reduce or relocate spawning habitat. Liklihood of adjusting coastal development to accommodate is low.		
Species: ***Esox americanus americanus*** (Redfin Pickerel)		2
Severity: Moderate Severity	Actionability: Moderately actionable	
Notes: Sea level rise may affect some RPK sites since the fish occurs in FW streams in extremely close proximity to saltmarshes. Maintaining migration corridors and stream connectivity between saltmarsh and proximal FW systems is important for species persistence as sea level rises.		
Species: ***Acipenser brevirostrum*** (Shortnose Sturgeon)		1
Severity: Moderate Severity	Actionability: Actionable with difficulty	
Notes: Climate change could reduce or relocate spawning habitat and truncate or shift species natural range, and result in reduced prey (clams and other calcareous animals).		
Species: ***Morone saxatilis*** (Striped Bass)		2
Severity: Moderate Severity	Actionability: Actionable with difficulty	
Notes: Climate change could reduce or relocate spawning, rearing, and overwintering habitat and shift species natural range. Liklihood of adjusting to accommodate is low. Abundance and assemblages of prey species will likely be altered.		
Species: ***Pseudopleuronectes americanus*** (Winter Flounder)		2
Severity: Moderate Severity	Actionability: Actionable with difficulty	
Notes: While reduced fishing pressure may allow Gulf of Maine stocks to rebuild slightly, changed in habitat associated with climate change and other environmental variables may limit the ability of the population to reach its potential.		

Class	*Amphibia* (Amphibians)	SGCN Category
Species: ***Ambystoma laterale*** (Blue-spotted Salamander)		2
Severity: Moderate Severity	Actionability: Actionable with difficulty	
Notes: Climate change; potential impacts predicted for long-hydroperiod vernal pools and swamps		

Class	*Anthozoa* (Corals, Sea Pens, Sea Fans, Sea Anemones)	SGCN Category

SGCN and Habitat Stressors

Level 1 Threat Climate Change and Severe Weather

Level 2 Threat: Habitat Shifting or Alteration

Class	*Anthozoa* (Corals, Sea Pens, Sea Fans, Sea Anemones)	SGCN Category
Species:	***Gersemia rubiformis*** (Sea Strawberry)	2
Severity:	Severe	Actionability: Actionable with difficulty
Notes:	Ocean acidification are unknown at this time but could result in decreased suvivorship of larvae, and growth and feeding shown in other corals. The ability to mitigate ocean acidification is low.	

Class	*Asteroidea* (Sea Stars)	SGCN Category
Species:	***Asterias rubens*** (Common Sea Star)	2
Severity:	Severe	Actionability: Moderately actionable
Notes:	Ocean acidification results in decreased suvivorship of larvae, and growth and feeding by adult sea stars. Likelyhood is high and large scale. The ability to mitigate ocean acidificationis low.	
Species:	***Crossaster papposus*** (Common Sun Star)	2
Severity:	Severe	Actionability: Actionable with difficulty
Notes:	Commmon Sun Stars are cold-water species. Ocean acidification results in decreased suvivorship of larvae, and growth and feeding by adult sea stars. Likelyhood is high and large scale. The ability to mitigate ocean acidificationis low.	
Species:	***Asterias forbesi*** (Forbes's Starfish)	2
Severity:	Moderate Severity	Actionability: Actionable with difficulty
Notes:	Ocean acidification results in decreased suvivorship of larvae, and growth and feeding by adult sea stars. Likelyhood is high and large scale. The ability to mitigate ocean acidificationis low.	
Species:	***Solaster endeca*** (Purple Sunstar)	2
Severity:	Severe	Actionability: Actionable with difficulty
Notes:	Ocean acidification results in decreased suvivorship of larvae, and growth and feeding by adult sea stars. Likelyhood is high and large scale. The ability to mitigate ocean acidificationis low.	
Species:	***Stephanasterias albula*** (White Sea Star)	2
Severity:	Severe	Actionability: Actionable with difficulty
Notes:	Ocean acidification results in decreased suvivorship of larvae, and growth and feeding by adult sea stars. Likelyhood is high and large scale. The ability to mitigate ocean acidificationis low.	

Class	*Aves* (Birds)	SGCN Category
Species:	***Anthus rubescens*** (American Pipit)	2
Severity:	Severe	Actionability: Actionable with difficulty
Notes:	In Maine, this species nests only on Mt. Katahdin so it is unable to adapt to climate change	
Species:	***Sterna paradisaea*** (Arctic Tern)	1
Severity:	Moderate Severity	Actionability: Actionable with difficulty
Notes:	Long term threat of climate change related sea level rise	
Species:	***Fratercula arctica*** (Atlantic Puffin)	2
Severity:	Moderate Severity	Actionability: Actionable with difficulty
Species:	***Hirundo rustica*** (Barn Swallow)	2
Severity:	Moderate Severity	Actionability: Moderately actionable
Notes:	Continued loss of agricultural lands particularly fields and pastures to forest succession	
Species:	***Catharus bicknelli*** (Bicknell's Thrush)	1
Severity:	Moderate Severity	Actionability: Highly actionable
Notes:	Loss of mountaintop habitat	

SGCN and Habitat Stressors

Level 1 Threat Climate Change and Severe Weather

Level 2 Threat: Habitat Shifting or Alteration

Class	*Aves* (Birds)	SGCN Category

Species: ***Mniotilta varia*** (Black-and-white Warbler) **2**
Severity: Moderate Severity **Actionability:** Actionable with difficulty
Notes: Some shifting of habitat but species has "room to move"

Species: ***Vermivora cyanoptera*** (Blue-winged Warbler) **2**
Severity: Moderate Severity **Actionability:** Moderately actionable
Notes: Loss of early successional habitat to forest succession

Species: ***Poecile hudsonicus*** (Boreal Chickadee) **2**
Severity: Moderate Severity **Actionability:** Actionable with difficulty
Notes: Climate change

Species: ***Toxostoma rufum*** (Brown Thrasher) **2**
Severity: Moderate Severity **Actionability:** Moderately actionable
Notes: Loss of early successional habitat to forest succession

Species: ***Setophaga pensylvanica*** (Chestnut-sided Warbler) **2**
Severity: Moderate Severity **Actionability:** Moderately actionable
Notes: Loss of early successional habitat to forest succession

Species: ***Sterna hirundo*** (Common Tern) **2**
Severity: Moderate Severity **Actionability:** Actionable with difficulty
Notes: Sea level rise

Species: ***Antrostomus vociferus*** (Eastern Whip-poor-will) **2**
Severity: Moderate Severity **Actionability:** Moderately actionable
Notes: Loss of early successional habitat to forest succession

Species: ***Coccothraustes vespertinus*** (Evening Grosbeak) **2**
Severity: Moderate Severity **Actionability:** Moderately actionable

Species: ***Histrionicus histrionicus*** (Harlequin Duck) **1**
Severity: Severe **Actionability:** Actionable with difficulty
Notes: Loss of offshore habitats due to sea level rise, may be mitigated through protection of upland areas that will allow intertidal areas to migrate inland.

Species: ***Sternula antillarum*** (Least Tern) **1**
Severity: Severe **Actionability:** Actionable with difficulty
Notes: Nesting habitat loss from sea level rise will be difficult to reverse. Existing development and hardened shorelines will not allow Maine beaches to migrate inland as sea level rise occurs.

Species: ***Tringa flavipes*** (Lesser Yellowlegs) **1**
Severity: Moderate Severity **Actionability:** Actionable with difficulty
Notes: Loss of salt marsh and other coastal habitats due to sea level rise. Reversibilty depends on ability of salt marsh and other coastal habitats to migrate inland as sea level rise occurs.

Species: ***Ammodramus nelsoni*** (Nelson's Sparrow) **2**
Severity: Moderate Severity **Actionability:** Highly actionable
Notes: Loss of saltmarsh to sea level rise

Species: ***Contopus cooperi*** (Olive-sided Flycatcher) **2**
Severity: Moderate Severity **Actionability:** Actionable with difficulty
Notes: Climate change

SGCN and Habitat Stressors

Level 1 Threat Climate Change and Severe Weather

Level 2 Threat: Habitat Shifting or Alteration

Class	*Aves* (Birds)	SGCN Category

Species: ***Charadrius melodus*** (Piping Plover) **1**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Sea-level rise and beach erosion will contribute to loss of nesting habitat. Existing development and hardened shorelines will prevent Maine beaches from migrating inland as sea level rise occurs.

Species: ***Progne subis*** (Purple Martin) **2**

Severity: Moderate Severity **Actionability:** Highly actionable

Notes: Loss of early successional habitat to forest succession

Species: ***Calidris maritima*** (Purple Sandpiper) **1**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Habitat loss from sea level rise may be mitigated by conservation of upland areas that will allow for intertidal areas to migrate inland. Impacts to intertidal invertebrate prey base may occur from ocean acidification.

Species: ***Alca torda*** (Razorbill) **2**

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Sea level rise flooding low topographical islands

Species: ***Calidris canutus rufa*** (Red Knot) **1**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Sea level rise will impact beach and offshore habitats; conservation of upland areas may allow beach and mudflat habitats to migrate inland as sea level rises. Limited opportunities in southern Maine.

Species: ***Phalaropus lobatus*** (Red-necked Phalarope) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Impacts to copepod prey base from ocean acidification may not be mitigated.

Species: ***Sterna dougallii*** (Roseate Tern) **1**

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Sea level rise has been implicated as a significant threat as most of the islands that provide nesting space for Roseate Terns are very low sites, but threat is most likely a very long term issue

Species: ***Regulus calendula*** (Ruby-crowned Kinglet) **2**

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Climate change

Species: ***Arenaria interpres*** (Ruddy Turnstone) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Habitat loss from sea level rise could be mitigated through conservation of upland areas that will allow intertidal habitats to migrate inland. Impacts to invertebrate prey base from acidification may be difficult to minimize.

Species: ***Euphagus carolinus*** (Rusty Blackbird) **1**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Climate change

Species: ***Ammodramus caudacutus*** (Saltmarsh Sparrow) **1**

Severity: Severe **Actionability:** Moderately actionable

Notes: Sea level rise

SGCN and Habitat Stressors

Level 1 Threat Climate Change and Severe Weather

Level 2 Threat: Habitat Shifting or Alteration

Class	*Aves* (Birds)	SGCN Category
Species: ***Calidris alba*** (Sanderling)		**2**
Severity: Severe	**Actionability:** Actionable with difficulty	
Notes: Habitat loss from sea level rise and impacts to invertebrate prey base from ocean acidification may be severe. Conservation of upland areas may allow for intertidal areas to migrate inland as sea level rise occurs.		
Species: ***Calidris pusilla*** (Semipalmated Sandpiper)		**2**
Severity: Severe	**Actionability:** Actionable with difficulty	
Notes: Sea level rise may be mitigated through conservation of upland areas that will allow intertidal habitats to migrate inland. Ocean acidification may impact invertebrate prey base.		
Species: ***Tringa solitaria*** (Solitary Sandpiper)		**2**
Severity: Moderate Severity	**Actionability:** Actionable with difficulty	
Notes: Loss of marsh habitats due to sea level rise may be mitigated through environmental review process. Protection of upland areas may allow marsh habitats to migrate inland.		
Species: ***Oreothlypis peregrina*** (Tennessee Warbler)		**2**
Severity: Moderate Severity	**Actionability:** Actionable with difficulty	
Notes: Climate change		
Species: ***Tachycineta bicolor*** (Tree Swallow)		**2**
Severity: Moderate Severity	**Actionability:** Moderately actionable	
Notes: Loss of early successional foreaging habitat to forest succession		
Species: ***Numenius phaeopus*** (Whimbrel)		**2**
Severity: Severe	**Actionability:** Actionable with difficulty	
Notes: Habitat loss from sea level rise and impacts to invertebrate prey base from ocean acidification may occur. Conservation of upland habitats may allow intertidal areas to migrate inland as sea level rise occurs.		
Species: ***Coccyzus americanus*** (Yellow-billed Cuckoo)		**2**
Severity: Moderate Severity	**Actionability:** Moderately actionable	
Notes: Loss of early successional habitat to forest succession		

Class	*Bivalvia* (Marine And Freshwater Molluscs)	SGCN Category
Species: ***Zirfaea crispata*** (Atlantic Great Piddock)		**2**
Severity: Severe	**Actionability:** Actionable with difficulty	
Notes: Ocean acidification may result in decreased suvivorship of larvae, and growth and feeding shown in other molluscs. Likelyhood is high and large scale. The ability to mitigate ocean acidification is low.		
Species: ***Alasmidonta varicosa*** (Brook Floater)		**1**
Severity: Moderate Severity	**Actionability:** Actionable with difficulty	
Notes: Climate change impacts (e.g., increased water temperature, drought, etc)		

Class	*Chondrichthyes* (Sharks, Rays, And Skates)	SGCN Category

SGCN and Habitat Stressors

Level 1 Threat Climate Change and Severe Weather

Level 2 Threat: Habitat Shifting or Alteration

Class	*Chondrichthyes* (Sharks, Rays, And Skates)	SGCN Category

Species: ***Dipturus laevis*** (Barndoor Skate) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Climate driven increases in ocean temperature are occurring and will have long-term effects on global fisheries. Consequently, the first acclimatizing response to temperature variations in fishes is typically to shift spatial distribution in order to stay within there ideal thermal tolerance range. Particularly it's expected "cold-water" fish species ranges are anticipated to be reduced. Thus, more research is needed to better understanding the genetic and physiological sensitivity of skates to climate change. In addition, it will also be important to determine how temperature changes will alter distribution in common prey items. Ocean acidification could also have an impact on eggcase structure/integrity, which could significantly affect the success/recovery of these populations. However, more research is needed

Species: ***Lamna nasus*** (Porbeagle) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Climate driven increases in ocean temperature are occurring and will have long-term effects on global fisheries. Consequently, the first acclimatizing response to temperature variations in fishes is typically to shift spatial distribution in order to stay within there ideal thermal tolerance range. Particularly it's expected "cold-water" fish species ranges are anticipated to be reduced. Thus, more research is needed to better understanding the genetic and physiological sensitivity of skates to climate change. In addition, it will also be important to determine how temperature changes will alter distribution in common prey items. Ocean acidification could also have an impact on eggcase structure/integrity, which could significantly affect the success/recovery of these populations. However, more research is needed

Species: ***Isurus oxyrinchus*** (Shortfin Mako) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Climate driven increases in ocean temperature are occurring and will have long-term effects on global fisheries. Consequently, the first acclimatizing response to temperature variations in fishes is typically to shift spatial distribution in order to stay within there ideal thermal tolerance range. Particularly it's expected "cold-water" fish species ranges are anticipated to be reduced. Thus, more research is needed to better understanding the genetic and physiological sensitivity of skates to climate change. In addition, it will also be important to determine how temperature changes will alter distribution in common prey items. Ocean acidification could also have an impact on eggcase structure/integrity, which could significantly affect the success/recovery of these populations. However, more research is needed

Species: ***Malacoraja senta*** (Smooth Skate) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Climate driven increases in ocean temperature are occurring and will have long-term effects on global fisheries. Consequently, the first acclimatizing response to temperature variations in fishes is typically to shift spatial distribution in order to stay within there ideal thermal tolerance range. Particularly it's expected "cold-water" fish species ranges are anticipated to be reduced. Thus, more research is needed to better understanding the genetic and physiological sensitivity of skates to climate change. In addition, it will also be important to determine how temperature changes will alter distribution in common prey items. Ocean acidification could also have an impact on eggcase structure/integrity, which could significantly affect the success/recovery of these populations. However, more research is needed

SGCN and Habitat Stressors

Level 1 Threat Climate Change and Severe Weather

Level 2 Threat: Habitat Shifting or Alteration

Class ***Chondrichthyes*** **(Sharks, Rays, And Skates)** **SGCN Category**

Species: ***Amblyraja radiata*** (Thorny Skate) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Climate driven increases in ocean temperature are occurring and will have long-term effects on global fisheries. Consequently, the first acclimatizing response to temperature variations in fishes is typically to shift spatial distribution in order to stay within there ideal thermal tolerance range. Particularly it's expected "cold-water" fish species ranges are anticipated to be reduced. Thus, more research is needed to better understanding the genetic and physiological sensitivity of skates to climate change. In addition, it will also be important to determine how temperature changes will alter distribution in common prey items. Ocean acidification could also have an impact on eggcase structure/integrity, which could significantly affect the success/recovery of these populations. However, more research is needed

Species: ***Leucoraja ocellata*** (Winter Skate) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Climate driven increases in ocean temperature are occurring and will have long-term effects on global fisheries. Consequently, the first acclimatizing response to temperature variations in fishes is typically to shift spatial distribution in order to stay within there ideal thermal tolerance range. Particularly it's expected "cold-water" fish species ranges are anticipated to be reduced. Thus, more research is needed to better understanding the genetic and physiological sensitivity of skates to climate change. In addition, it will also be important to determine how temperature changes will alter distribution in common prey items. Ocean acidification could also have an impact on eggcase structure/integrity, which could significantly affect the success/recovery of these populations. However, more research is needed

Class ***Echinoidea*** **(Sea Urchins)** **SGCN Category**

Species: ***Strongylocentrotus droebachiensis*** (Green Sea Urchin) **2**

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: The impacts of increasing ocean acidification on sea urchins is poorly understood (low certainty), but the effects of the threat are likely to occur, statewide (pervasively), given that sea urchins have a calcareous shell and spines and larvae have a calcareous skeleton.

Class ***Gastropoda*** **(Aquatic And Terrestrial Snails)** **SGCN Category**

Species: ***Arrhoges occidentalis*** (American Pelican Foot) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Ocean acidification may result in decreased suvivorship of larvae, and growth and feeding shown in other molluscs. Likelyhood is high and large scale. The ability to mitigate ocean acidification is low.

Species: ***Boreotrophon clathratus*** (Clathrate Trophon) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Ocean acidification may result in decreased suvivorship of larvae, and growth and feeding shown in other molluscs. Likelyhood is high and large scale. The ability to mitigate ocean acidification is low.

Species: ***Colus pygmaeus*** (Colus Snail) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Ocean acidification may result in decreased suvivorship of larvae, and growth and feeding shown in other molluscs. Likelyhood is high and large scale. The ability to mitigate ocean acidification is low.

Species: ***Boreotrophon truncatus*** (Murex) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Ocean acidification may result in decreased suvivorship of larvae, and growth and feeding shown in other molluscs. Likelyhood is high and large scale. The ability to mitigate ocean acidification is low.

SGCN and Habitat Stressors

Level 1 Threat Climate Change and Severe Weather

Level 2 Threat: Habitat Shifting or Alteration

Class	*Gastropoda* (Aquatic And Terrestrial Snails)	SGCN Category

Species: ***Vertigo morsei*** (Six-whorl Vertigo) **1**

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Impacts of climate change to habitat could become a concern for a specialist that is primarily found in much cooler regions.

Species: ***Ptychatractus ligatus*** (Spindle Shell) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Ocean acidification may result in decreased suvivorship of larvae, and growth and feeding shown in other molluscs. Likelyhood is high and large scale. The ability to mitigate sea level rise and ocean acidification is low.

Class	*Holothuroidea* (Sea Cucumbers)	SGCN Category

Species: ***Cucumaria frondosa*** (Orange-footed Sea Cucumber) **2**

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: The impacts of increasing ocean acidification on sea cucumbers is poorly understood (low certainty), but the effects of the threat are likely to occur, statewide (pervasively), given that sea cucumbers have calcified body structures.

Species: ***Psolus fabricii*** (Psolus) **2**

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Ocean acidification results in decreased suvivorship of larvae, and growth and feeding by adult echinoderms. Likelyhood is high and large scale. The ability to mitigate ocean acidificationis low.

Species: ***Psolus phantapus*** (Psolus) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Ocean acidification results in decreased suvivorship of larvae, and growth and feeding by adult echinoderms. Likelyhood is high and large scale. The ability to mitigate ocean acidificationis low.

Species: ***Thyonidium drummondii*** (Sea Cucumber) **2**

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Ocean acidification results in decreased suvivorship of larvae, and growth and feeding by adult echinoderms. Likelyhood is high and large scale. The ability to mitigate ocean acidificationis low.

Class	*Insecta* (Insects)	SGCN Category

Species: ***Leucorrhinia patricia*** (Canada Whiteface) **2**

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Climate change; boreal peatland species at extreme southern edge of range

Species: ***Boloria frigga saga*** (Frigga Fritillary) **1**

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Species is at southern range edge and is a northern peatland specialist

Species: ***Oeneis polixenes katahdin*** (Katahdin Arctic) **1**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Tundra habitat is limited and has no where to shift

Species: ***Plebejus idas*** (Northern Blue) **2**

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Climate change; a northern species at the extreme southern edge of its range

SGCN and Habitat Stressors

Level 1 Threat Climate Change and Severe Weather

Level 2 Threat: Habitat Shifting or Alteration

Class	*Insecta* (Insects)	SGCN Category
Species:	***Boloria chariclea grandis*** (Purple Lesser Fritillary)	2
Severity:	Moderate Severity	Actionability: Actionable with difficulty
Notes:	Climate change; a boreal species at the extreme southern edge of its range	
Species:	***Somatochlora brevicincta*** (Quebec Emerald)	2
Severity:	Moderate Severity	Actionability: Actionable with difficulty
Notes:	Climate change; mostly boreal specialist of peatland habitats at the southern edge of its range	
Species:	***Williamsonia lintneri*** (Ringed Boghaunter)	1
Severity:	Moderate Severity	Actionability: Actionable with difficulty
Notes:	Increased drought or evapotranspiration could compromise long hydroperiod wetlands	
Species:	***Epeorus frisoni*** (Roaring Brook Mayfly)	1
Severity:	Moderate Severity	Actionability: Actionable with difficulty
Notes:	Impacts of climate change (e.g., increased water temperature, lack of snow melt at high elevations, etc)	
Species:	***Bombus affinis*** (Rusty-patched Bumble Bee)	1
Severity:	Moderate Severity	Actionability: Actionable with difficulty
Notes:	Species thought to be adapted to a fairly narrow range of climate conditions, so may be more vulnerable to climate change than other Bombus spp.	
Species:	***Cicindela marginata*** (Salt Marsh Tiger Beetle)	2
Severity:	Moderate Severity	Actionability: Actionable with difficulty
Notes:	Habitat could be lost or damaged with rising sea levels and increased frequency of extreme storms and flooding	
Species:	***Aeshna juncea*** (Sedge Darner)	2
Severity:	Moderate Severity	Actionability: Actionable with difficulty
Notes:	Climate change; mostly boreal species near edge of range in northern fen habitats	
Species:	***Siphlonisca aerodromia*** (Tomah Mayfly)	1
Severity:	Moderate Severity	Actionability: Actionable with difficulty
Notes:	Impacts of climate change (e.g., increased water temperature, lack of snow melt, etc)	

Class	*Malacostraca* (Crustaceans)	SGCN Category
Species:	***Pandalus borealis*** (Northern Shrimp)	1
Severity:	Severe	Actionability: Actionable with difficulty
Notes:	Northern shrimp are an arctic/sub-arctic species in the southernmost extent of their range in the Gulf of Maine, and have been highly sensitive to warming conditions. The likelihood of this impact is likely and may be occurring (high); certainty is high; and the spatial extent is pervasive (state-wide (coastal)).	
Species:	***Lebbeus polaris*** (Polar Lebbeid Shrimp)	2
Severity:	Moderate Severity	Actionability: Actionable with difficulty
Notes:	Ocean acidification results in decreased suvivorship of larvae, and growth and feeding by crustaceans. Likelyhood is high and large scale. The ability to mitigate ocean acidificationis low.	
Species:	***Lebbeus groenlandicus*** (Spiny Lebbeid Shrimp)	2
Severity:	Severe	Actionability: Actionable with difficulty
Notes:	Ocean acidification results in decreased suvivorship of larvae, and growth and feeding by crustaceans. Likelyhood is high and large scale. The ability to mitigate ocean acidificationis low.	

Class	*Mammalia* (Mammals)	SGCN Category

SGCN and Habitat Stressors

Level 1 Threat Climate Change and Severe Weather

Level 2 Threat: Habitat Shifting or Alteration

Class	*Mammalia* (Mammals)	SGCN Category

Species: ***Balaenoptera musculus*** (Blue Whale) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: The major impact from habitat shifting due to climate change would likely be a loss or relocation of prey or breeding grounds.

Species: ***Balaenoptera physalus*** (Finback Whale) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: The major impact from habitat shifting due to climate change would likely be a loss or relocation of prey or breeding grounds.

Species: ***Megaptera novaeangliae*** (Humpback Whale) **1**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: The major impact from habitat shifting due to climate change would likely be a loss or relocation of prey or breeding grounds.

Species: ***Eubalaena glacialis*** (North Atlantic Right Whale) **1**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: The major impact from habitat shifting due to climate change would likely be a loss or relocation of prey or breeding grounds.

Species: ***Balaenoptera borealis*** (Sei Whale) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: The major impact from habitat shifting due to climate change would likely be a loss or relocation of prey or breeding grounds.

Species: ***Physeter macrocephalus*** (Sperm Whale) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: The major impact from habitat shifting due to climate change would likely be a loss or relocation of prey or breeding grounds.

Class	*Merostomata* (Horseshoe Crabs And Sea Scorpions)	SGCN Category

Species: ***Limulus polyphemus*** (Horseshoe Crab) **1**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Sea level rise will result in significant loss of mating, egg-laying, larval development, and forage habitat. Ocean acidification may result in decreased suvivorship of larvae, and growth and feeding shown in other Arthropods (crustaceans). Likelyhood is high and large scale. The ability to mitigate sea level rise and ocean acidification is low.

Class	*Ophiuroidea* (Brittle Stars)	SGCN Category

Species: ***Gorgonocephalus arcticus*** (Northern Basket Starfish) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Ocean acidification results in decreased suvivorship of larvae, and growth and feeding by adult sea stars. Likelyhood is high and large scale. The ability to mitigate ocean acidificationis low.

Class	*Reptilia* (Reptiles)	SGCN Category

Species: ***Emydoidea blandingii*** (Blanding's Turtle) **1**

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Llimate change for species occupying narrow latitudinal band

SGCN and Habitat Stressors

Level 1 Threat Climate Change and Severe Weather

Level 2 Threat: Habitat Shifting or Alteration

Class	*Reptilia* (Reptiles)	SGCN Category

Species: ***Chelonia mydas*** (Green Seaturtle) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: The major impact from habitat shifting due to climate change would likely be a loss or relocation of prey and nesting beaches.

Species: ***Lepidochelys kempii*** (Kemp's Ridley Seaturtle) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: The major impact from habitat shifting due to climate change would likely be a loss or relocation of prey and nesting beaches.

Species: ***Dermochelys coriacea*** (Leatherback Seaturtle) **1**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: The major impact from habitat shifting due to climate change would likely be a loss or relocation of prey and nesting beaches.

Species: ***Caretta caretta*** (Loggerhead Seaturtle) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: The major impact from habitat shifting due to climate change would likely be a loss or relocation of prey and nesting beaches.

Class	*Rhynchonellata* (Brachiopods)	SGCN Category

Species: ***Terebratulina septentrionalis*** (Lamp Shell) **2**

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Ocean acidification are unknown at this time but could result in decreased suvivorship of larvae, and growth and feeding shown in other marine invertebrates. The ability to mitigate ocean acidification is low.

Habitats Associated With This Stressor:

Macrogroup **Alpine**

Habitat System Name: **Acadian-Appalachian Alpine Tundra**

Notes: Effects of climate change in alpine zones are somewhat uncertain, as cloud cover and weather patterns may affect vegetation communities more than temperature averages.

Habitat System Name: **Acadian-Appalachian Subalpine Woodland and Heath-Krummholz**

Notes: Effects of climate change in alpine zones are somewhat uncertain, as cloud cover and weather patterns may affect vegetation communities more than temperature averages.

Macrogroup **Boreal Upland Forest**

Habitat System Name: **Acadian Low Elevation Spruce-Fir-Hardwood Forest**

Notes: Effects of climate change are uncertain, but boreal and subalpine are likely among the most vulnerable of Maine's forest types

Habitat System Name: **Acadian Sub-boreal Spruce Flat**

Notes: Effects of climate change are uncertain, but boreal and subalpine are likely among the most vulnerable of Maine's forest types

Habitat System Name: **Acadian-Appalachian Montane Spr-Fir-Hwd Forest**

Notes: Effects of climate change are uncertain, but boreal and subalpine are likely among the most vulnerable of Maine's forest types

SGCN and Habitat Stressors

Level 1 Threat Climate Change and Severe Weather

Level 2 Threat: Habitat Shifting or Alteration

Macrogroup Boreal Upland Forest

Habitat System Name: Boreal Jack Pine-Black Spruce Forest

Notes: Effects of climate change are uncertain, but boreal and subalpine are likely among the most vulnerable of Maine's forest types

Macrogroup Central Hardwood Swamp

Habitat System Name: North-Central Interior Wet Flatwoods

Notes: At least one coastal example of this type is likely to be inundated with saltwater following 1m of sea level rise.

Macrogroup Coastal Grassland & Shrubland

Habitat System Name: Northern Atlantic Coastal Plain Dune and Maritime Grassland

Notes: Sea level rise may reduce area of beach

Habitat System Name: Northern Atlantic Coastal Plain Sandy Beach

Notes: Sea level rise may reduce area of beach

Macrogroup Intertidal Bedrock

Habitat System Name: High Intertidal

Notes: Sea level rise will change the vertical zonation of this habitat

Habitat System Name: Low-Intertidal

Notes: Sea level rise will change the vertical zonation of this habitat

Habitat System Name: Mid-Intertidal

Notes: Sea level rise will change the vertical zonation of this habitat

Macrogroup Intertidal Gravel Shore

Habitat System Name: High Intertidal

Notes: Sea level rise will change the vertical zonation of this habitat

Habitat System Name: Lower Intertidal

Notes: Sea level rise will change the vertical zonation of this habitat

Habitat System Name: Mid-Intertidal

Notes: Sea level rise will change the vertical zonation of this habitat

Macrogroup Intertidal Mollusc Reefs

Habitat System Name: Gastropod Reef

Notes: Ocean/coastal acidification degrades this habitat.

Habitat System Name: Mussel Reef

Notes: Ocean/coastal acidification degrades this habitat.

Habitat System Name: Oyster Reef

Notes: Ocean/coastal acidification degrades this habitat.

Macrogroup Intertidal Mudflat

Habitat System Name: Freshwater Tidal Marsh

Notes: Sea level rise will drown these habitats; ocean acidification may make them uninhabitable

Habitat System Name: Non-Vascular Mudflat

Notes: Sea level rise will drown these habitats; ocean acidification may make them uninhabitable

Habitat System Name: Submerged Aquatic Vegetation

Notes: Sea level rise will drown these habitats; ocean acidification may make them uninhabitable

SGCN and Habitat Stressors

Level 1 Threat Climate Change and Severe Weather

Level 2 Threat: Habitat Shifting or Alteration

Macrogroup Intertidal Sandy Shore

Habitat System Name: Sand Beach

Notes: Sea level rise can drown sandy shore habitats and the biological communities they support will be lost or displaced

Habitat System Name: Sand Flat

Notes: Sea level rise can drown sandy shore habitats and the biological communities they support will be lost or displaced

Habitat System Name: Submerged Aquatic Vegetation

Notes: Sea level rise can drown sandy shore habitats and the biological communities they support will be lost or displaced

Macrogroup Intertidal Tidal Marsh (peat-forming)

Habitat System Name: Acadian Coastal Salt Marsh

Notes: Sea level rise may result in shift of salt marsh landward if undeveloped. What is uncertain is how much marsh will be lost/gained (degree of severity).

Habitat System Name: Coastal Plain Tidal Marsh

Notes: Sea level rise may result in shift of salt marsh landward if undeveloped. What is uncertain is how much marsh will be lost/gained (degree of severity).

Macrogroup Intertidal Water Column

Habitat System Name: Confined Channel

Notes: Changes in ocean chemistry due to climate change e.g. ocean acidification

Habitat System Name: Embayment

Notes: Changes in ocean chemistry due to climate change e.g. ocean acidification

Habitat System Name: Exposed Shore

Notes: Changes in ocean chemistry due to climate change e.g. ocean acidification

Macrogroup Northern Hardwood & Conifer

Habitat System Name: Appalachian (Hemlock)-Northern Hardwood Forest

Notes: Habitat shifting as a result of climate change; forestry adaptation may be possible

Habitat System Name: Laurentian-Acadian Northern Hardwoods Forest

Notes: Habitat shifting as a result of climate change; forestry adaptation may be possible

Habitat System Name: Laurentian-Acadian Pine-Hemlock-Hardwood Forest

Notes: Habitat shifting as a result of climate change; forestry adaptation may be possible

Habitat System Name: Laurentian-Acadian Red Oak-Northern Hardwood Forest

Notes: Habitat shifting as a result of climate change; forestry adaptation may be possible

Habitat System Name: Northeastern Coastal and Interior Pine-Oak Forest

Notes: Habitat shifting as a result of climate change; forestry adaptation may be possible

Macrogroup Northern Peatland & Fens

Habitat System Name: Acadian Maritime Bog

Notes: Northern peatlands listed as vulnerable in Whitman et al (2013)

Habitat System Name: Boreal-Laurentian Bog

Notes: Northern peatlands listed as vulnerable in Whitman et al (2013)

Habitat System Name: Boreal-Laurentian-Acadian Acidic Basin Fen

Notes: Northern peatlands listed as vulnerable in Whitman et al (2013)

Habitat System Name: Laurentian-Acadian Alkaline Fen

Notes: Northern peatlands listed as vulnerable in Whitman et al (2013)

SGCN and Habitat Stressors

Level 1 Threat Climate Change and Severe Weather

Level 2 Threat: Habitat Shifting or Alteration

Macrogroup Northern Peatland & Fens

Habitat System Name: North-Central Interior and Appalachian Acidic Peatland

Notes: Northern peatlands listed as vulnerable in Whitman et al (2013)

Macrogroup Rivers and Streams

Habitat System Name: Headwaters and Creeks

Macrogroup Subtidal Bedrock Bottom

Habitat System Name: Bedrock

Notes: Chemical changes in water chemistry (e.g. ocean acidification) can affect biological communities and natural processes

Habitat System Name: Erect Epifauna

Notes: Chemical changes in water chemistry (e.g. ocean acidification) can affect biological communities and natural processes

Habitat System Name: Kelp Bed

Notes: Chemical changes in water chemistry (e.g. ocean acidification) can affect biological communities and natural processes

Macrogroup Subtidal Coarse Gravel Bottom

Habitat System Name: Coarse Gravel

Notes: Chemical changes in water chemistry (e.g. ocean acidification) can affect biological communities and natural processes

Habitat System Name: Erect Epifauna

Notes: Chemical changes in water chemistry (e.g. ocean acidification) can affect biological communities and natural processes

Habitat System Name: Kelp Bed

Notes: Chemical changes in water chemistry (e.g. ocean acidification) can affect biological communities and natural processes

Macrogroup Subtidal Mollusc Reefs

Habitat System Name: Gastropod Reef

Notes: Chemical changes in water chemistry (e.g. ocean acidification) can affect biological communities and natural processes

Habitat System Name: Mussel Reef

Notes: Chemical changes in water chemistry (e.g. ocean acidification) can affect biological communities and natural processes

Habitat System Name: Oyster Reef

Notes: Chemical changes in water chemistry (e.g. ocean acidification) can affect biological communities and natural processes

Macrogroup Subtidal Mud Bottom

Habitat System Name: Submerged Aquatic Vegetation

Notes: Chemical changes in water chemistry (e.g. ocean acidification) can affect biological communities and natural processes

Habitat System Name: Unvegetated

Notes: Chemical changes in water chemistry (e.g. ocean acidification) can affect biological communities and natural processes

Macrogroup Subtidal Pelagic (Water Column)

Habitat System Name: Confined Channel

Notes: Chemical changes in water chemistry (e.g. ocean acidification) can affect biological communities and natural processes

Habitat System Name: Nearshore

Notes: Chemical changes in water chemistry (e.g. ocean acidification) can affect biological communities and natural processes

Habitat System Name: Offshore

Notes: Chemical changes in water chemistry (e.g. ocean acidification) can affect biological communities and natural processes

Habitat System Name: Upwelling Zones

Notes: Chemical changes in water chemistry (e.g. ocean acidification) can affect biological communities and natural processes

SGCN and Habitat Stressors

Level 1 Threat Climate Change and Severe Weather

Level 2 Threat: Habitat Shifting or Alteration

Macrogroup **Subtidal Sand Bottom**

Habitat System Name: **Submerged Aquatic Vegetation**

Notes: Chemical changes in water chemistry (e.g. ocean acidification) can affect biological communities and natural processes

Habitat System Name: **Unvegetated**

Notes: Chemical changes in water chemistry (e.g. ocean acidification) can affect biological communities and natural processes

SGCN and Habitat Stressors

Level 1 Threat Climate Change and Severe Weather

Level 2 Threat: Habitat Shifting or Alteration

The Wildlife Action Plan was developed through a lengthy participatory process with state agencies, targeted conservation partners, and the general public. The Plan is non-regulatory. The species, stressors, and voluntary conservation actions identified in the Plan complement, but do not replace, existing work programs and priorities by state agencies and partners.