Appendix I: List of the Conservation Actions

List of Conservation Actions

Below is the list of conservation actions as defined and categorized by the three-level lexicon of actions developed by the U.S. Fish & Wildlife Service for their database, Tracking and Reporting on Actions for Conservation of Species (TRACS). In addition, New Jersey chose to develop an even finer fourth level of actions that are specific to New Jersey.

TRACS Conservation Action Categories			
Level 1	**Level 2**	**Level 3**	**Level 4: NJ-specific Conservation Action Statements**

1 Coordination and Administration

1.2 Incentives: *Development and delivery of economic incentives to private landowners to influence responsible stewardship of land/water and specific species.*

1.2.1 Incentives

1.2.1.1 Enhance critical migratory stopover habitats for songbirds, raptors, shorebirds, bats and invertebrates through incentive programs with adjacent private landowners to increase the effective size of the habitat.

1.2.1.2 Create incentives (non-monetary and/or monetary) for and programs to deliver those incentives to private and public landowners and land managers to increase the effective size of SGCN habitats by protecting/restoring adjacent habitats that contribute to the overall size of the "core" area and/or provide a natural buffer, enhancing the suitability of the core area for SGCN, and/or connect conserved SGCN habitats.

1.2.1.3 Secure and promote the protection/restoration of critical coastal habitats (beach/dune, scrub-shrub, forest, wetland, marsh, and marine and estuarine habitats) that provide nesting, migrating and wintering areas for SGCN birds, fish and other coastal SGCN through incentive programs.

1.2.1.4 Secure and promote the protection, restoration, and/or development of old-growth forest stands with large trees, in particular those within large, contiguous forest tracts through incentive programs.

1.2.1.5 Secure and promote the protection/restoration of critical SGCN forested habitat and minimize forest edge to benefit interior forest and disturbance-sensitive SGCN through incentive programs.

1.2.1.6 Secure and promote the protection/restoration of riparian and floodplain habitats, inland wetland habitats (marsh, vernal pool, fen, emergent shrubland, forest), and other aquatic habitats (including open waters) and/or biologically appropriate buffers through incentive programs.

1.2.1.7 Secure and promote the protection/restoration of fish SGCN habitats by protecting lands adjacent to fish SGCN habitats and/or aquatic systems feeding into such habitats through incentive programs.

1.2.1.8 Create incentives (non-monetary and/or monetary) for and programs to deliver those incentives to municipalities, land developers, and other land managers to retain and/or enhance native vegetation adjacent to aquatic habitats, and along riparian areas and wildlife movement corridors.

1.2.1.9 Develop a new funding source, targeting natural resource damages monies, mitigation monies or other available sources, to fund new or existing Forestry Stewardship Programs.

1.2.1.10 Coordinate across government agencies and non-government organizations to maximize the availability of and enrollment in existing landowner incentive programs (e.g., "farm bill," partners, etc.) to maintain and/or improve habitat.

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1.2.1.11 Create incentives (non-monetary and/or monetary) for and programs to deliver those incentives to public and private landowners and managers, including but not limited to government and non-government agencies/organizations, energy, mining, and transportation and utility service companies/agencies, to minimize commercial infrastructure and impervious surfaces, and to improve wildlife habitats, limit fragmentation, reduce elements which would exacerbate mortality, and/or implement activities/restoration that would create new or improved corridor habitat and/or increase connectivity, and to increase structural habitat diversity through the implementation of a variety of vegetation management practices that also considers appropriate timing for such activities to avoid sensitive periods (e.g., nesting, denning, roosting), and to minimize (if not avoid) incidental take of resident and migratory fish and wildlife and/or disturbance to them (in particular during breeding periods) on public and private lands for maintaining populations in perpetuity.

1.2.1.12 Create incentives (non-monetary and/or monetary) for land developers to redevelop abandoned areas (e.g., shopping centers, office complexes) to minimize the loss of natural habitats and reduce the extent of impervious surfaces as part of new construction to increase water recharge in those areas.

1.2.1.13 Create incentives (non-monetary and/or monetary) for and programs to deliver those incentives to land developers to minimize the impacts of new residential and commercial developments on SGCN and their habitats.

1.2.1.14 Create incentives (non-monetary and/or monetary) for and programs to deliver those incentives to NJ landowners and land managers (including farmers, foresters and developers) for reducing or eliminating the use of herbicides and pesticides, and implementing more ecologically safe strategies when using such products.

1.2.1.15 Create incentives (non-monetary and/or monetary) for and programs to deliver those incentives to NJ landowners and land managers (including farmers, foresters and developers) for reducing or eliminating the use of rodenticides, and implementing more ecologically safe strategies when using such products.

1.2.1.16 Create incentives (non-monetary and/or monetary) within State regulations (mitigations requirements or credit, BMP satisfaction, etc.) to promote the use of retailers who refrain from selling specified invasive or other problematic plant species.

1.2.1.17 Develop a public-relations oriented certification program for private retailers who refrain from selling specified invasive or other problematic plant species.

1.2.1.18 Create incentives (non-monetary and/or monetary) for and programs to deliver those incentives to public and private landowners and land managers to control and reduce the impacts of invasive, native and non-native species in order to increase structural habitat diversity.

1.2.1.19 Create incentives for federal, state and local agencies and approved consulting foresters that provide financial, logistical or planning assistance to farmers, woodland landowners, and private landowners to adopt and/or endorse consistent BMPs concerning controlled burns to maintain and/or improve wildlife habitat.

1.2.1.20 Coordinate across government agencies and non-government organizations to create or expand upon tax-based incentive programs available to private, agricultural, commercial, industrial or governmental landowners and land managers to include or provide for incentives for the maintenance and/or improvement to existing habitat via the endorsement of wildlife-related BMP's.

1.2.1.21 Create and/or support market-based programs that subsidize or create branding for products derived sustainably from managed wildlife habitats.

1.2.1.22 Create incentives (non-monetary and/or monetary) for and programs to deliver those incentives to horse/livestock farm owners and managers to increase structural habitat diversity in and around the farms by managing vegetation for a variety of species, in particular, farms that have fragmented forests, and by implementing ecologically best practices (e.g., do not permit overgrazing, do not allow livestock to wade in waterbodies).

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1.2.1.23 Create incentives (non-monetary and/or monetary) for and programs to deliver those incentives to private and public landowners and land managers to provide cost shares and/or plan approvals for management based on management approaches and prescriptions.

1.2.1.24 Create incentives (non-monetary and/or monetary) for and programs to deliver those incentives to public and private landowners, with habitat of suitable patch size to support breeding grassland-dependent species, to alter the timing of vegetation management to benefit grassland and pollinator species.

1.2.1.25 Create incentives (non-monetary and/or monetary) within State regulations to assist and programs to deliver those incentives to aquaculture growers to relocate, for example, from intertidal to subtidal lease areas through buyouts of leases or microloans, and/or promoting on-lease conservation measures used by aquaculture growers (such as the implementation of conservation easements, use of living shorelines, incorporation of BMPs for habitat protection, etc.) for maintaining and enhancing healthy, SGCN-associated terrestrial and aquatic habitats and associated riparian habitats, and to minimize (if not avoid) incidental take of resident and migratory fish and wildlife and/or disturbance to them (in particular during breeding periods) on public and private lands for maintaining populations in perpetuity.

1.2.1.26 Develop a new funding source, targeting natural resource damages monies, mitigation monies or other available sources, to fund new or existing landowner incentive programs.

1.2.1.27 Create legislation to re-instate incentives for citizens bringing their own shopping bag(s) to grocery stores in an effort to decrease the amount of plastic shopping bags in circulation.

1.2.1.28 Create incentives to implement dynamic forest disturbance patterns, using tools such as fire, flooding, and silviculture, to support the full life cycle requirements of forest and early successional wildlife species.

2 Direct Management of Natural Resources

2.1 Create new habitat or natural processes: *Creation of new habitat or natural processes for the benefit of fish and wildlife and recreational users.*

2.1.1 Habitat conversion: *Conversion of one type of habitat into another (e.g., creating bottomland forest from agricultural land, wetland creation) Note: Forest and wetland would be the appropriate broad habitat types to code for these two examples.*

2.1.1.1 Create high marsh habitat through impoundments and diking of low marsh areas that are less susceptible to breaching by storms and sea-level rise.

2.1.1.2 Utilize dredged materials to create marsh islands to provide nesting habitat for birds and marine turtles.

2.2 Dam and barrier removal: *Removal of barriers to maintain aquatic species populations and restore ecological functions in streams (e.g., dam or dike removal, notching of dams).*

2.2.1 Culvert work: *Replacement or repair of road culverts (e.g., installing larger culvert, eliminating perching).*

2.2.1.1 Replace existing barriers to wildlife movement with and/or install appropriately-sized systems to accommodate wildlife dispersal.

2.2.5 Obstruction removal: *Removal of other obstructions (e.g., beaver dams).*

2.2.5.1 Enhance fish SGCN habitats by removing obstructions to fish passage to benefit those species.

2.3 Fire management: *Use of fire to benefit fish and wildlife and their habitats.*

2.3.2 Fuel reduction: *Application of treatments to reduce the risk of high-severity wildfires and to manage changes in the ecological functions of forests (e.g., mechanical thinning).*

2.3.2.1 Prevent wildfires by reducing natural fuel (e.g., leaf litter).

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2.3.3 Prescribed burning: *Application of fire in a knowledgeable manner to forest fuels on a specific land under selected weather conditions to accomplish predetermined, well-defined management objectives (e.g., burning an established native grass community to reduce or eliminate invading brush or exotic species).*

2.3.3.1 Evaluate different management techniques of prescribed burns that might be used to mimic the historic role of fire and other natural disturbances in shaping an ecosystem.

2.3.3.2 Conduct prescribed burning in Northern New Jersey forests to maintain and regenerate a mosaic of upland forest habitats.

2.3.3.3 Conduct prescribed burning to improve wildlife habitat.

2.4 Fish and wildlife habitat structures: *Installation of structures to benefit fish and wildlife and their habitats.*

2.4.2 Hibernacula: *Creation or improvement of overwintering sites.*

2.4.2.1 Investigate the need to stabilize important bat hibernacula to ensure structural soundness and install the necessary supports.

2.6 Hazard or infrastructure removal: *Removal of hazards or infrastructure to benefit fish and wildlife and their habitats.*

2.6.6 Shoreline armoring removal: *Removal of shoreline armoring to improve aquatic habitats (e.g., jetties, riprap).*

2.6.6.1 Remove shoreline armoring to reduce its impacts on aquatic habitats.

2.8 Invasive species control: *Control of invasive animal and plant species to maintain native species populations and restore ecological functions.*

2.8.0 Invasive species control strategies and implementation

2.8.0.1 Control invasive insect infestations by implementing BMP strategies through biological, chemical and/or mechanical means that will depress, or when appropriate, eradicate populations in a manner that avoids excessive harm to non-target species using BMPs to control infestations and limit their spread based on an inventory of invasive insect distribution and response to outbreaks.

2.8.0.2 Develop, implement, monitor and evaluate pest control/management strategies to reduce the impacts of over-abundant wildlife species (native and/or native , invasive species) on native vegetation and the degradation of habitats supporting SGCN. Over-abundant wildlife species include but are not limited to mute swans, Canada geese, beaver and white-tailed deer.

2.8.0.3 Work with NJ Invasive Species Strike Team to identify areas with and eradicate aquatic invasive species such as the Asian Swamp Eel, Northern Snakehead, and the Chinese pond mussel. Encourage the implementation of biological and mechanical removal/control. When chemical control is used, encourage low-volume, targeted application using NJDEP-approved chemicals in accordance with the specific instructions for that chemical. Follow BMPs to maximize the effectiveness of the strategies while avoiding excessive harm to non-target species.

2.8.0.4 Implement control/management strategies to reduce the impacts and/or limit the distribution of invasive, native and non-native species (wildlife and plants) that pose threats to native wildlife or communities. Encourage the implementation of biological and mechanical removal/control. When chemical control is used, encourage low-volume, targeted application using NJDEP-approved chemicals in accordance with the specific instructions for that chemical. Follow BMPs to maximize the effectiveness of the strategies while avoiding excessive harm to non-target species.

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2.8.0.5 Implement biologically safe and appropriate control/management strategies, and where appropriate, eradication strategies to reduce the impacts and/or limit the distribution of invasive and/or non-native plant species within or near aquatic systems using methods that will provide the most protection to the aquatic and riparian ecological system, and minimize disturbance to the soil and wildlife. Encourage the implementation of biological and mechanical removal/control. When chemical control is used, encourage low-volume, targeted application using NJDEP-approved chemicals in accordance with the specific instructions for that chemical.

2.8.0.6 Implement long-term management of invasive and/or non-native plants to help maintain functioning ecological systems and biological diversity, and to enhance travel corridors. Encourage the implementation of biological and mechanical removal/control. When chemical control is used, encourage low-volume, targeted application using NJDEP-approved chemicals in accordance with the specific instructions for that chemical.

2.9 Living shorelines: *Physical manipulation in shoreline areas to maintain fish and wildlife habitats and/or restore ecological functions.*

2.9.1 Beach renourishment: *Placement of sand onto beaches and employing other techniques for their renourishment.*

2.9.1.1 Implement best management practices for using mined sand or dredged material to improve habitat for wildlife, particularly for spawning horseshoe crabs and migrating shorebirds.

2.9.1.2 Coordinate the beneficial placement of dredge materials to create, enhance, and/or maintain colonial waterbird nesting, in particular along the Intra-Coastal Waterway.

2.9.1.3 Where beach renourishment projects are deemed necessary, implement such projects with a design to increase availability of nesting and foraging habitat for beach nesting birds.

2.9.1.4 Implement beach renourishment strategies that consider appropriate timing to avoid sensitive periods (e.g., nesting, denning, roosting) and minimizes harm to wildlife, particularly SGCN.

2.9.1.5 Expand the acreages and enhance the effective size of SGCN habitats by utilizing beach renourishment to restore adjacent, less optimal or unsuitable, habitats.

2.9.1.6 Reclaim degraded rare species habitats using beach renourishment, when appropriate, to restore habitat value for the documented/target SGCN.

2.9.1.7 Protect significant natural and/or unique communities by implementing best management practices for beach renourishment, when applicable.

2.9.1.8 Minimize habitat loss of critical coastal beach habitats that provide nesting, migrating, and wintering areas for birds and other coastal species by maintaining or enhancing these areas through beach renourishment.

2.9.1.9 Manage beaches to divert human activity away from staging areas for red knots and other migratory shorebirds during critical periods.

2.9.1.10 Repair beaches associated with marshes damaged by salt hay farm/dike abandonment and restore degraded sites for targeted SGCN species and their habitats.

2.9.1.11 Enhance critical migratory stopover beach habitats for songbirds, raptors, shorebirds, bats and invertebrates through beach renourishment and expand management to adjacent private lands to increase the effective size of the habitat.

2.9.1.12 Implement beach habitat management on state and other conservation lands to enhance food availability for migratory species (birds, bats, invertebrates).

2.9.1.13 Conduct beach renourishment to maintain, enhance and/or create feeding and roosting habitats for migratory species (shorebirds, raptors, bats, songbirds and invertebrates) in appropriate areas along documented migratory corridors around the State.

2.9.1.14 Implement best management practices (BMPs), protective strategies, and guidelines for maintaining and enhancing healthy, SGCN-associated beach habitats while minimizing (if not avoiding) incidental take of resident and migratory fish and wildlife and/or disturbance to them (in particular during breeding periods) on public and private lands for maintaining populations in perpetuity.

2.9.1.15 Implement beach management strategies to benefit urban-associated SGCN.

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2.9.1.16 Prevent or ameliorate near-term impacts of climate change throughout the State but in particular within the coastal and Delaware Bay areas by implementing habitat management strategies that will establish/improve habitat resilience, such as beach renourishment, that benefits wildlife inhabiting these areas.

2.9.2 Erosion control structures: *Installation of hard structures (e.g., seawall bulkhead) or living structures (e.g., greenwall systems) to control erosion.*

2.9.2.1 Install breakwaters in the form of living shorelines to reduce the impact of wave erosion while preserving the natural character of the site.

2.9.3 Sand dune restoration: *Application of techniques to restore sand dunes (e.g., fencing off sea-grass areas).*

2.9.3.1 Prevent or ameliorate near-term impacts of climate change throughout the State but in particular within the coastal and Delaware Bay areas by implementing habitat management strategies that will establish/improve habitat resilience, such as sand dune restoration, that benefits wildlife inhabiting these areas.

2.9.3.2 Implement sand dune restoration strategies that consider appropriate timing to avoid sensitive periods (e.g., nesting, denning, roosting) and minimizes harm to wildlife, particularly SGCN.

2.9.3.3 Expand the acreages and enhance the effective size of SGCN habitats by restoring adjacent, less optimal or unsuitable, habitats through sand dune restoration.

2.9.3.4 Reclaim degraded rare species habitats using sand dune restoration needed to restore habitat value for the documented/target SGCN.

2.9.3.5 Protect significant natural and/or unique communities by implementing best management practices for sand dune restoration.

2.9.3.6 Minimize habitat loss of critical coastal dune habitats that provide nesting, migrating, and wintering areas for birds and other coastal species by maintaining or enhancing these areas through sand dune restoration.

2.9.3.7 Manage sand dunes to divert human activity away from staging areas for red knots and other migratory shorebirds during critical periods.

2.9.3.8 Implement sand dune restoration strategies to benefit urban-associated SGCN.

2.9.3.9 Enhance critical migratory stopover sand dune habitats for songbirds, raptors, shorebirds, bats and invertebrates through sand dune restoration and expand management to adjacent private lands to increase the effective size of the habitat.

2.9.3.10 Implement sand dune restoration strategies on state and other conservation lands to enhance food availability for migratory species (birds, bats, invertebrates).

2.9.3.11 Conduct sand dune restoration to maintain, enhance and/or create feeding and roosting habitats for migratory species (shorebirds, raptors, bats, songbirds and invertebrates) in appropriate areas along documented migratory corridors around the State and evaluate the effectiveness of such management.

2.9.3.12 Implement best management practices (BMPs), protective strategies, and guidelines for maintaining and enhancing healthy, SGCN-associated sand dune habitats while minimizing (if not avoiding) incidental take of resident and migratory fish and wildlife and/or disturbance to them (in particular during breeding periods) on public and private lands for maintaining populations in perpetuity.

2.10 Planting/seeding: *Planting or seeding to maintain fish and wildlife habitats and/or restore ecological functions.*

2.10.0 Planting/seeding strategies for terrestrial or aquatic habitat creation or restoration

2.10.0.1 Prevent or ameliorate near-term impacts of climate change throughout the State by developing, implementing and monitoring/evaluating habitat management strategies that will establish/improve habitat resilience (e.g., shorelines of the coast and Delaware Bay, forested habitats of the Pinelands and Skylands) that benefits wildlife inhabiting these areas, in particular within the coastal and Delaware Bay areas.

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2.10.0.2 Improve the availability of prey/food resources through terrestrial and aquatic plantings and habitat restoration for SGCN populations, in particular for those populations thought to be limited due wholly or in part to a lack of (or contaminated) food resources, and for migratory species (birds, bats, invertebrates).

2.10.0.3 Restore and/or enhance habitats to benefit urban-associated SGCN.

2.10.0.4 Restore and/or enhance suitable travel corridors connecting conserved habitats for SGCN by restoring unsuitable (or less optimal) habitats.

2.10.0.5 Implement habitat restoration and/or enhancement activities that include the creation of vegetative buffers between sensitive habitats (e.g., aquatic systems) and human-inhabited areas (e.g., residences, parks, etc.) and that is conducted during appropriate timing to avoid sensitive periods (e.g., nesting, denning, roosting) while minimizing (if not avoiding) incidental take of resident and migratory fish and wildlife and/or disturbance to them (in particular during breeding periods) on public and private lands for maintaining populations in perpetuity.

2.10.0.6 Expand the acreages and enhance the effective size of SGCN habitats by restoring adjacent, less optimal or unsuitable, habitats.

2.10.0.7 Restore/reclaim and enhance degraded rare species habitats through strategic revegetation and management efforts for documented/target SGCN.

2.10.0.8 Protect significant natural and/or unique communities by implementing best management practices when conducting habitat restoration strategies.

2.10.0.9 Restore and/or enhance riparian and floodplain habitats, inland wetland habitats (marsh, vernal pool, fen, emergent shrubland, forest), and other aquatic habitats (including open waters) and/or biologically appropriate buffers to minimize degradation, alteration and/or changes in hydrology and subsequent disturbances to and behavioral changes of wildlife (e.g., restoring biologically appropriate buffers, revegetation or restoration efforts, etc.).

2.10.0.10 Minimize the loss of important habitats (e.g., coastal scrub-shrub and grassy habitats, high and low marsh habitats, etc.) that provide nesting, migrating, and wintering areas for SGCN birds and other coastal and marsh-dependent species through habitat restoration efforts.

2.10.0.11 Restore and/or enhance critical migratory terrestrial and aquatic habitats (e.g., beach, grasslands, forest, scrub-shrub, etc.) for songbirds, raptors, shorebirds, waterfowl, bats and invertebrates through habitat restoration efforts and expand habitat restoration to adjacent private lands to increase the effective size of the habitat.

2.10.0.12 Create and/or maintain scrub-shrub habitats through revegetation efforts with little to no impact on forested, wetland and grassland habitats to maintain populations of shrub-dependent SGCN.

2.10.0.13 Restore and/or enhance impoundments to provide suitable foraging and nesting habitat for SGCN species inhabiting them (e.g., bitterns, rails, ducks, turtles and some invertebrates).

2.10.0.14 Implement best management practices (BMPs), protective strategies and guidelines for restoring and enhancing healthy, SGCN-associated habitats while minimizing (if not avoiding) incidental take of resident and migratory fish and wildlife and/or disturbance to them (in particular during breeding periods) on public and private lands for maintaining populations in perpetuity.

2.10.0.15 Restore and/or enhance terrestrial and aquatic habitats proximate to but not adjacent to roads and other transportation corridors for terrestrial-bound SGCN species whose behavior (i.e., dispersal across roads) may be altered by doing so, and therefore decrease road mortality of such species (e.g., amphibians, snakes, turtles, small mammals).

2.10.0.16 Reverse the trend of Native Widgeon grass invading former eelgrass bed habitats by actively restoring eelgrass in applicable areas.

2.10.0.17 Maintain, enhance and/or restore SGCN-inhabited/used freshwater wetlands through restoring submerged aquatic vegetation.

2.10.0.18 Implement a habitat improvement and restoration program to restore cold-water fish habitat, ecosystems and populations.

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2.10.0.19 Provide woody debris within documented Tiger Salamander pools to benefit Tiger Salamanders and other associated vernal pool herpetofauna for shelter, egg-attachment and soil protection.

2.10.0.20 Expand breeding opportunities for obligate vernal pool breeders and related herpetofauna by creating vegetated buffers for dispersal from breeding pools in all directions, or as needed to establish the connectivity of metapopulations.

2.10.0.21 Restore and/or enhance understory habitats that suppress invasive species and provide critical resources and enhance sheltering, foraging, and nesting cover for wildlife.

2.10.0.22 Restore and/or enhance terrestrial and aquatic habitats to promote the regeneration of native vegetation and enhance structural diversity to benefit SGCN (e.g., vegetative buffers of aquatic systems, allow coarse, woody debris to remain in terrestrial, aquatic and riparian habitats to provide shelter, riparian stabilization and necessary microclimates, plant native trees, shrubs and grasses, etc.).

2.10.0.23 Restore and/or enhance roosting habitats for migratory species (shorebirds, raptors, bats, songbirds and invertebrates) in appropriate areas along documented migratory corridors around the State.

2.10.0.24 Use NJ's CHANJ mapping and guidance to establish vegetation and enhance or create corridors between fragmented habitats with similar vegetation, slope, soils, structure, etc. to ensure vegetative integrity is maintained to allow wildlife to safely disperse, and corridors are buffered with natural habitats to minimize disturbance to wildlife within the corridors.

2.10.0.25 Enhance SGCN fish habitats through aquatic and riparian vegetation restoration.

2.10.0.26 Reestablish/restore historically important submerged aquatic vegetation beds in Delaware Bay tributaries to benefit SGCN waterfowl, waterbirds, terrapins, sea turtles and finfish.

2.10.1 Coral: *Application of techniques to reestablish coral reefs.*

2.10.1.1 Reestablish coral reefs to improve the availability of prey/food resources for SGCN whose populations are thought to be limited due wholly or in part to a lack of (or contaminated) food resources.

2.11 Vegetation management: *Physical manipulation of vegetation to maintain fish and wildlife habitats and/or restore ecological functions.*

2.11.0 Vegetation management strategies for terrestrial or aquatic habitat creation or restoration

2.11.0.1 Conduct vegetation management in native terrestrial and aquatic habitats to provide suitable and appropriately sized areas to improve ecological diversity.

2.11.0.2 Conduct vegetation management in native terrestrial and aquatic habitats to provide suitable and appropriately sized areas for target SGCN and/or species groups; management should complement rare species needs in a targeted area.

2.11.0.3 Create suitable travel corridors connecting and increasing the effective size of conserved habitats for SGCN by restoring unsuitable (or less optimal) habitats through vegetation management.

2.11.0.4 Implement vegetation management strategies that consider appropriate timing to avoid sensitive periods (e.g., nesting, denning, roosting) and minimize harm to wildlife, particularly SGCN.

2.11.0.5 Expand the acreages and enhance the effective size of SGCN habitats by restoring adjacent, less optimal or unsuitable, habitats through vegetation management.

2.11.0.6 Reclaim degraded rare species habitats by conducting vegetation management needed to restore habitat value for the documented/target SGCN.

2.11.0.7 Protect significant natural and/or unique communities by implementing best management practices through vegetation management.

2.11.0.8 Maintain, enhance and/or restore biologically appropriate buffers for SGCN-inhabited/used freshwater wetlands through vegetation management.

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			2.11.0.9 Minimize habitat loss of critical coastal habitats that provide nesting, migrating, and wintering areas for birds and other coastal species by maintaining or enhancing these areas through vegetation management.
			2.11.0.10 Enhance critical migratory stopover beach habitats for songbirds, raptors, shorebirds, bats and invertebrates through vegetation management and expand management to adjacent private lands to increase the effective size of the habitat.
			2.11.0.11 Implement vegetation management on state and other conservation lands to enhance food availability for migratory species (birds, bats, invertebrates).
			2.11.0.12 Conduct vegetation management to create feeding and roosting habitats for migratory species (shorebirds, raptors, bats, songbirds and invertebrates) in appropriate areas along documented migratory corridors around the State.
			2.11.0.13 Implement best management practices (BMPs), protective strategies, and guidelines for vegetation management to maintain and enhance healthy, SGCN-associated habitats while minimizing (if not avoiding) incidental take of resident and migratory fish and wildlife and/or disturbance to them (in particular during breeding periods) on public and private lands for maintaining populations in perpetuity.
			2.11.0.14 Conduct vegetation management adjacent to roads for SGCN species whose behavior (i.e., dispersal across roads) *may* be altered by doing so, and therefore decrease road mortality of such species (e.g., amphibians, snakes, turtles, small mammals).
			2.11.0.15 Implement vegetation management to benefit urban-associated SGCN.
			2.11.0.16 Prevent or ameliorate near-term impacts of climate change throughout the State by developing, implementing and monitoring/evaluating habitat management strategies that will establish/improve habitat resilience (e.g., shorelines of the coast and Delaware Bay, forested habitats of the Pinelands and Skylands) that benefits wildlife inhabiting these areas, in particular within the coastal and Delaware Bay areas.
			2.11.0.17 Implement vegetation management strategies to improve the availability of prey/food resources for SGCN whose populations are thought to be limited due wholly or in part to a lack of (or contaminated) food resources.
			2.11.0.18 Implement forest management/silvicultural strategies that promote the development of new old-growth forests and/or minimize the loss of old-growth forest stands with large trees and within large, contiguous tracts.
			2.11.0.19 Implement forest management/silviculture strategies that enhance and maintain critical core forests as appropriate for targeted species (e.g., for many SGCN forest birds, "core" forest would include the forest area >90 meters from the forest edge), in perpetuity, to benefit interior forest and disturbance-sensitive SGCN.
			2.11.0.20 Create and/or maintain scrub-shrub habitats through management efforts with little to no impact on forested, wetland and grassland habitats to maintain populations of shrub-dependent SGCN.
			2.11.0.21 Minimize the degradation, alteration and/or changes in hydrology of wetlands, riparian and floodplain areas, and aquatic habitats (including open waters) and subsequent disturbances to and behavioral changes of wildlife by maintaining or enhancing these areas and biologically appropriate buffers through habitat management and/or revegetation or restoration efforts.
			2.11.0.22 Minimize habitat loss of high and low marsh habitats that provide nesting, migrating and wintering areas for SGCN birds and other marsh-dependent SGCN by maintaining or enhancing these areas through habitat management and/or revegetation or restoration efforts.
			2.11.0.23 Implement appropriate habitat management actions in areas where natural disturbances, such as wildfire, have been precluded.
			2.11.0.24 Conduct vegetation management adjacent to aquatic habitats following BMPs to enhance habitat for target shrub- or young forest-dependent SGCN while minimizing negative impacts to other SGCN.

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			2.11.0.25 Conduct vegetation management along access roads following BMPs to enhance habitat for target shrub- or young forest-dependent SGCN while minimizing negative impacts to other SGCN.
			2.11.0.26 Conduct vegetation management along roadsides and medians, avoiding peak activity periods for wildlife, that enhances wildlife dispersal naturally and safely across roads and similar barriers to/between terrestrial and/or aquatic habitats.
			2.11.0.27 Conduct vegetation management for target shrub- or young forest-dependent SGCN following BMPs to minimize the risk of the establishment of invasive and non-native plants.
			2.11.0.28 Conduct vegetation management in agricultural areas following BMPs to enhance habitat for target shrub- or young forest-dependent SGCN while minimizing negative impacts to other SGCN.
			2.11.0.29 Conduct vegetation management on transportation and service corridors (i.e., rights-of-way) following BMPs to enhance habitat for target shrub- or young forest-dependent SGCN while minimizing negative impacts to other SGCN.
			2.11.0.30 Identify and prioritize areas where various management tools (such as increasing salinity through the management of water levels or chemical applications) may be effective in reducing phragmites within and restoring marsh habitat.
			2.11.0.31 In areas where vegetative communities are shifting due to fire suppression and controlled burns are not feasible, manage vegetation to improve wildlife habitat.
			2.11.0.32 Increase structural habitat diversity around and when feasible, within agricultural landscapes by managing vegetation for a variety of species, in particular, those farms that have removed scrub-shrub habitat and/or fragmented forests, and by implementing ecologically best practices (e.g., no-till farming, maintaining hedgerows, buffer set-asides, etc.).
			2.11.0.33 Increase structural habitat diversity by implementing long-term vegetation management to minimize the potential for the establishment of invasive and/or non-native plants that may outcompete native vegetation.
			2.11.0.34 Increase structural habitat diversity by managing residential, commercial and recreational areas' landscapes for a variety of species. For example, integrate short and tall grasses, specific host plants, brush piles, water sources/wetlands, shrubby areas, nesting areas and no-mow set-asides.
			2.11.0.35 Increase structural habitat diversity by managing vegetation adjacent to aquatic habitats in a manner that provides a buffer from runoff and erosion and a microclimate to stabilize seasonal temperatures to benefit a variety of aquatic and semi-aquatic species.
			2.11.0.36 Increase structural habitat diversity by managing vegetation for a variety of species and considering their life history requirements (e.g., travel corridors, shelter, resting and breeding areas) to minimize the risk of harm.
			2.11.0.37 Increase structural habitat diversity by minimizing the removal of coarse, woody debris in terrestrial, aquatic and riparian habitats which benefits wildlife.
			2.11.0.38 Increase structural habitat diversity in and around horse/livestock farms by managing vegetation for a variety of species, in particular, in and around farms that have fragmented forests, and by implementing ecologically best practices (e.g., do not permit overgrazing, do not allow livestock to wade in waterbodies).
			2.11.0.39 Increase structural habitat diversity in and around solar farms by managing vegetation for a variety of species and that also considers appropriate timing for such activities to avoid sensitive periods (e.g., nesting, denning, roosting) and minimize harm to wildlife. For example, integrate short and tall grasses, specific host plants, brush piles, water sources/wetlands, shrubby areas, nesting areas and no-mow set-asides.

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2.11.0.40 Increase structural habitat diversity surrounding areas used for energy, mining, and transportation and service corridors by managing vegetation for a variety of species and that also considers appropriate timing for such activities to avoid sensitive periods (e.g., nesting, denning, roosting) and minimize harm to wildlife. For example, integrate short and tall grasses, specific host plants, brush piles, water sources/wetlands, shrubby areas, nesting areas and no-mow set-asides, and avoid managing habitat during the breeding seasons for ground-nesting birds, reptiles, amphibians and small mammals.

2.11.0.41 Increase structural habitat diversity through the implementation of a variety of vegetation management practices such as prescribed burns (either increasing or decreasing their frequency depending on the site and objective), plantings, etc. that also considers appropriate timing for such activities to avoid sensitive periods (e.g., nesting, denning, roosting) and minimize harm to wildlife.

2.11.0.42 Increase structural habitat diversity within wind farms for terrestrial bound and low-flying species and around wind farms for other wildlife by managing vegetation for a variety of species and that also considers appropriate timing for such activities to avoid sensitive periods (e.g., nesting, denning, roosting) and minimize harm to wildlife.

2.11.0.43 Manage forests to increase variation in age structure and composition using BMPs that promote and maintain functioning ecological forest-based systems and biological diversity.

2.11.0.44 Manage phragmites adjacent to coastal marshes of interest, in particular those that are within underdeveloped areas and are unprotected, through herbicide application and water management to improve resiliency of the marshes to sea level rise.

2.11.0.45 Regularly and/or rotationally create young forest habitat in targeted areas to maintain and regenerate a mosaic of upland forest habitats that will benefit shrub- and young forest-dependent species.

2.12 Water management: *Management of water to benefit fish and wildlife and their habitats.*

2.12.1 Ditch plugs: *Installation of earthen plugs into drainage ditches to restore wetlands.*

2.12.1.1 Implement best management practices (BMPs), protective strategies, and guidelines for ditch plugging to maintain and enhance healthy, resident and migratory SGCN-associated habitats while minimizing (if not avoiding) incidental take of resident and migratory fish and wildlife and/or disturbance to them (in particular during breeding periods) on public and private lands for maintaining populations in perpetuity.

2.12.2 Diversion/headgate: *Installation or maintenance of structures to divert water.*

2.12.2.1 Prevent or ameliorate near-term impacts of climate change throughout the State but in particular within the coastal and Delaware Bay areas by implementing habitat management strategies that will establish/improve habitat resilience, such as using diversions, that benefits wildlife inhabiting these areas.

2.12.3 Drainage: *Removal of tile drains or drainage ditches to restore wetland hydrology.*

2.12.3.1 Remove drainage ditches to benefit urban-associated SGCN.

2.12.3.2 Prevent or ameliorate near-term impacts of climate change throughout the State by developing, implementing and monitoring/evaluating habitat management strategies that will establish/improve habitat resilience (e.g., shorelines of the coast and Delaware Bay, forested habitats of the Pinelands and Skylands) such as removing drainage ditches to restore natural stream flows and wetlands, that benefit wildlife inhabiting these areas.

2.12.3.3 Remove tile drains and drainage ditches to improve wetland hydrology and restore natural stream flows during appropriate times to avoid sensitive periods (e.g., nesting, denning, roosting) and minimizes harm to wildlife, particularly SGCN.

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2.12.3.4 Expand the acreages and enhance the effective size of SGCN habitats by reclaiming/restoring adjacent, degraded habitats by removing tile drains and drainage ditches.

2.12.3.5 Remove drainage ditches adjacent to roads to decrease the attraction for amphibians, reptiles and small mammals, and thereby minimizing road mortality of such species (e.g., amphibians, snakes, turtles, small mammals).

2.12.3.6 Protect significant natural and/or unique communities by and when removing tile drains and drainage ditches.

2.12.3.7 Minimize habitat loss of critical coastal habitats that provide nesting, migrating, and wintering areas for birds and other coastal species by maintaining or enhancing these areas by removing drainage ditches.

2.12.3.8 Enhance critical migratory stopover beach habitats for songbirds, raptors, shorebirds, bats and invertebrates by removing drainage ditches and expanding management to adjacent private lands to increase the effective size of the habitat.

2.12.3.9 Implement drain removal on state and other conservation lands to enhance food availability for migratory species (birds, bats, invertebrates).

2.12.3.10 Use tile drain and drainage ditch removal to create feeding and roosting habitats for migratory species (shorebirds, raptors, bats, songbirds and invertebrates) in appropriate areas along documented migratory corridors around the State.

2.12.3.11 Implement best management practices (BMPs), protective strategies, and guidelines when removing tile drains and drainage ditches to maintain and enhance healthy, SGCN-associated habitats while minimizing (if not avoiding) incidental take of resident and migratory fish and wildlife and/or disturbance to them (in particular during breeding periods) on public and private lands for maintaining populations in perpetuity.

2.12.5 Spring development: *Application of techniques to improve the flow, quantity and yield of water from a natural spring.*

2.12.5.1 Implement a habitat improvement and restoration program to restore cold-water fish habitat, ecosystems and populations.

2.12.6 Tide gate: *Installation or maintenance of structures to increase the hydro-period and water depth of a wetland.*

2.12.6.1 Prevent or ameliorate near-term impacts of climate change throughout the State but in particular within the coastal and Delaware Bay areas by implementing habitat management strategies that will establish/improve habitat resilience, such as tide gates, that benefits wildlife inhabiting these areas.

2.12.7 Waterfowl impoundment maintenance: *Maintenance of impoundments for waterfowl habitat (e.g., renovation of impoundment dikes).*

2.12.7.1 Manage impoundments to benefit SGCN species inhabiting them (e.g., bitterns, rails, ducks, turtles and some invertebrates).

2.12.7.2 Use impoundment management to create feeding and roosting habitats for migratory species (shorebirds, raptors, bats, songbirds and invertebrates) in appropriate areas along documented migratory corridors around the State.

2.12.7.3 Implement best management practices (BMPs), protective strategies, and guidelines for impoundment management to maintain and enhance healthy, SGCN-associated habitats while minimizing (if not avoiding) incidental take of resident and migratory fish and wildlife and/or disturbance to them (in particular during breeding periods) on public and private lands for maintaining populations in perpetuity.

2.12.7.4 Implement impoundment management strategies that consider appropriate timing to avoid sensitive periods (e.g., nesting, denning, roosting) and minimizes harm to wildlife, particularly SGCN.

2.12.7.5 Expand the acreages and enhance the effective size of SGCN habitats by restoring adjacent, less optimal or unsuitable, habitats through impoundment management.

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2.12.7.6 Reclaim degraded rare species habitats through impoundment management needed to restore habitat value for the documented/target SGCN.

2.12.7.7 Protect significant natural and/or unique communities by implementing best management practices for impoundment management.

2.12.7.8 Repair impoundments damaged by salt hay farm/dike abandonment and conduct restoration of degraded sites for targeted SGCN species and their habitats.

2.12.7.9 Minimize habitat loss of critical coastal habitats in Delaware Bay that provide nesting, migrating, and wintering areas for birds and other coastal species by maintaining or enhancing these areas through impoundment management.

2.12.7.10 Enhance critical migratory stopover beach habitats for songbirds, raptors, shorebirds, bats and invertebrates through impoundment management and expand management to adjacent private lands to increase the effective size of the habitat.

2.12.7.11 Restore existing salt hay farm areas by repairing breaches in impoundments to create habitat for high marsh nesting species and waterfowl.

2.12.7.12 Implement impoundment management to benefit urban-associated SGCN.

2.12.7.13 Manage impoundments adjacent to roads for SGCN species whose behavior (i.e., dispersal across roads) may be altered by doing so, and therefore decrease road mortality of such species (e.g., marsh birds, amphibians, turtles, small mammals).

2.12.7.14 Prevent or ameliorate near-term impacts of climate change throughout the State but in particular within the coastal and Delaware Bay areas by implementing habitat management strategies that will establish/improve habitat resilience, such as impoundment management, that benefits wildlife inhabiting these areas.

2.12.7.15 Implement impoundment management on state and other conservation lands to enhance food availability for migratory species (birds, bats, invertebrates).

2.12.8 Watering facilities: *Installation or maintenance of structures to collect and store water for the benefit of wildlife (e.g., water holes, guzzlers, wells).*

2.12.8.1 Install water control structures to reduce the impact of salt water intrusion to particularly vulnerable high marsh habitats.

2.12.8.2 Manage water levels in impoundments to improve coastal marsh habitat availability to wildlife and improve resiliency of the marshes to sea level rise.

2.13 Wildlife damage management: *Assessment and management of damage from nuisance native fish and wildlife. Includes control of predators by biological, chemical or mechanical means to maintain populations of species at risk and restore ecological functions (e.g., gull or cormorant control, nest exclusion devices, cave gating) Note: Limited eligibility for funding through WSFR grant programs.*

2.13.0 Nuisance fish and wildlife damage

2.13.0.1 Investigate the impacts of mosquito control methods on predator SGCN (bats, insectivorous birds). Develop, implement and evaluate the effectiveness of mosquito control-BMPs designed to avoid depletion or contamination of SGCN's insect prey base and drinking sources with pyrethroids, organophosphates, or other chemicals.

2.13.0.2 Develop, implement and evaluate the effectiveness of BMPs for mosquito control methods that may produce benefits for coastal marsh dependent SGCN wildlife, including but not limited to high-marsh nesting birds and migrating shorebirds and landbirds.

2.13.0.3 Investigate alternative saltmarsh mosquito control methods that may produce benefits for coastal marsh dependent SGCN wildlife, including but not limited to high-marsh nesting birds and migrating shorebirds and landbirds.

2.13.0.4 Investigate the effects of mosquito control methods on freshwater aquatic and semi-aquatic SGCN including but not limited to, amphibian, fish, dragonfly, and damselfly populations.

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2.13.0.5 Investigate the impacts of human-subsidized and/or naturally occurring predator species on SGCN to assess the need for integrated wildlife damage management techniques (e.g., predator exclosures, fish blockages, electric fence, culls) and/or policy changes on state land management that minimize the impacts of human-subsidized predators.

2.13.0.6 Develop, implement and evaluate the effectiveness of predator-control techniques aimed at improving SGCN populations and methods to minimize the impact of those species carrying parasites or diseases that may impact SGCN (e.g., raccoon roundworm kills Allegheny woodrat).

2.13.0.7 Develop, implement, monitor and evaluate management strategies to reduce the impacts of herbivory on native vegetation and the degradation of habitats supporting SGCN by invasive and/or native, over-abundant wildlife species including but not limited to mute swans, Canada geese, beaver and white-tailed deer.

2.13.0.8 Implement and assess management strategies to control and reduce the impacts of detrimental species and diseases that pose threats to native wildlife or communities.

2.14 Wildlife disease management: *Assessment and management of wildlife disease situations. Includes control or treatment of diseased animals to maintain populations of species at risk and restore ecological functions (e.g., chronic wasting disease, brucellosis, tuberculosis, plague management activities).*

2.14.0 Wildlife disease strategy development and investigation

2.14.0.1 Investigate diseases/pathogens impacting SGCN and/or their habitats.

2.14.0.2 Develop and implement strategies to combat the impacts of diseases/pathogens impacting SGCN and/or their habitats, track disease occurrences and monitor/research impacts to SGCN populations and their habitats.

2.14.0.3 Protect SGCN from exotic pathogen introduction or incident through implementation of a "rapid response plan"; DFW to give priority attention to these species in planning and/or implementing a response.

2.14.0.4 Conduct long-term monitoring of diseases in vulnerable wildlife to determine the magnitude of exposure within populations and around the State, the impacts to those species, in particular SGCN, and investigate the feasibility of mitigating for such impacts.

2.14.0.5 Assess the impacts of diseases on the life cycles of wildlife.

2.14.0.6 Distribute antihelminthic drugs targeting raccoon roundworm in raccoons proximal to Allegheny woodrat populations and/or implement a raccoon control strategy.

3 Data Collection and Analysis

3.0 General fish and wildlife research, survey or monitoring

3.0.0 Research, survey or monitoring - general fish and wildlife needs

3.0.0.1 Conduct long-term monitoring of resident and migratory SGCN populations using standardized survey protocols to determine the variables that may impact their long-term persistence in the State (e.g., population viability, distribution, dispersal, home range and habitat use, travel corridors, food availability, vulnerability to pollutants and disease, etc.). Compile this information to determine the likely causes of population declines and to understand metapopulation dynamics. Provide data to NJ DEP for integration into the Biotics database, Landscape Project and permitting review processes.

3.0.0.2 Identify (through literature searches, review of available data, enlistment of habitat and/or species experts, etc.) where data gaps exist regarding SGCN distribution, and their critical and supportive habitats. Conduct surveys using standardized survey protocols to acquire baseline data, and provide the data to NJ DEP for integration into the Biotics database, Landscape Project Map and permitting review processes.

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3.0.0.3 Gather baseline data on SGCN inhabiting permanently protected natural lands regarding their distribution and population (e.g., abundance, dispersal, demography including productivity and survival, etc.), and identify (through surveys/studies, literature searches, review of available data, enlistment of species experts, etc.) critical and supporting habitats within those landscapes.

3.0.0.4 Conduct long-term studies on SGCN inhabiting permanently protected natural lands to develop population trend data and changes in demography, and to determine if critical and/or supporting habitats are limited or changing; i.e., diminishing in value, acreage or connectivity.

3.0.0.5 Gather baseline data on resident and migratory SGCN (in particular migratory species for which New Jersey habitats are significant), terrestrial, freshwater and marine species, regarding the location and condition of their critical and supporting habitats (e.g., foraging, roosting, nesting/breeding, stopover, migration paths, etc.), and population demography (e.g., productivity, survival, dispersal). Compile this information into a database that includes descriptions of the conditions of the habitats and species, and a GIS component of the locations of these important habitats. Provide data to NJ DEP for integration into the Biotics database, Landscape Project and permitting review processes.

3.0.0.6 Conduct long-term studies on resident and migratory SGCN to determine if there are changes to the populations' demography (productivity, survival, dispersal) and/or to their critical and/or supporting habitats (i.e., diminishing in value, acreage or connectivity, etc.), in particular changes that would not maintain SGCN at viable levels for species populations. Update data and GIS maps; provide updated information to NJ DEP for integration into the Biotics database, Landscape Project and permitting review processes.

3.0.0.7 Collect baseline data to document species distributions, in particular SGCN, and current habitat for future analysis of possible distribution shifting as a result of habitat shifting or alteration associated with climate change impacts.

3.0.0.8 Conduct long-term studies and compare baseline metrics of documented species distributions and associated habitats to identify possible species and/or habitat shifting or alteration associated with climate change impacts.

3.0.0.9 Identify SGCN (through surveys/studies, literature searches, review of available data, enlistment of species experts, etc.) whose populations are thought to be limited due wholly or in part to a lack of (or contaminated) food resources, and compile/collect and evaluate data/information regarding potential management strategies to improve the availability of such SGCN's food resources.

3.0.0.10 Conduct long-term studies to evaluate the effectiveness of management strategies implemented to enhance food/prey availability for SGCN [whose populations are thought to be limited due wholly or in part to a lack of (or contaminated) food resources] through studies that investigate the populations and health of the food resources as well as the target SGCN. Revise management strategies as needed and continue to monitor the effectiveness of the efforts.

3.0.0.11 Develop, implement and evaluate the effectiveness of town plans that avoid impacts to SGCN species and their habitats.

3.0.0.12 Compile available life history information on urban-associated SGCN (e.g., predators, levels of nest/young depredation, breeding longevity and reproductive effort over time, preferred nesting/reproductive requirements, fidelity to breeding and wintering sites, comprehensive assessment of migration routes and destinations) for future development of management strategies to benefit such species.

3.0.0.13 Investigate the effects of pesticides, herbicides and other biological controls on SGCN and their critical and supporting habitats. Evaluate and modify management practices as appropriate.

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3.0.0.14 Identify areas with invasive, aquatic plants and animals and collect a detailed baseline assessment of the species' status and distribution. Solicit volunteers from organizations such as the New Jersey Invasive Species Strike Team to support this effort. Researchers and contractors performing Forest Stewardship Inventories and/or Plans on state lands should report invasive plant species through the New Jersey Invasive Species Strike Team phone application.

3.0.0.15 Conduct long-term monitoring of areas identified as having invasive, aquatic plants and animals to track the species' status/progress over time with or without the implementation of management strategies. Areas without management strategies should be assessed and prioritized for management/control. Areas where management strategies are being implemented should include an assessment of the management effort and identify/recommend and implement necessary changes to improve its success. Solicit volunteers from organizations such as the New Jersey Invasive Species Strike Team to support this effort.

3.0.0.16 Develop a baseline status (through studies and assessments, review of available data, enlistment of species experts, etc.) of marsh- and beach-dependent SGCN (and their habitats) whose populations may be impaired due to habitat degradation as a result of salt hay farm/dike abandonment.

3.0.0.17 Conduct long-term monitoring of marsh- and beach-dependent SGCN (and their habitats) to evaluate the effectiveness of the management strategies implemented to repair degraded marshes and beaches damaged by salt hay farm/dike abandonment within all bay shore areas.

3.0.0.18 Develop, implement and evaluate the effectiveness (through research and long-term monitoring) of engineering standards that embrace both shore protection/resiliency and habitat creation for shorebirds, horseshoe crabs and other coastal species along the Atlantic and Delaware Bay coasts that minimize horseshoe crab impingement and damage to beach habitat from residential and commercial construction.

3.0.0.19 Identify the presence and status (e.g., functioning, structure, slated for removal, etc.) of existing dams and culverts within and/or that may impact SGCN and their habitats, and create a database that includes a GIS component identifying the locations of such structures and their status. Share this information with appropriate organizations and/or agencies evaluating the benefits and risks of such structures on SGCN and their habitats.

3.0.0.20 Once baseline data identifying and describing the status of existing dams and culverts have been gathered, conduct evaluations at a variety of sites to determine whether the benefits of culvert and dam creation or removal outweigh the risks to SGCN species and their habitats, and if other variables/conditions specific to individual sites/locations result in a different outcome. Identify and target appropriate dams and culverts for removal and/or reconstruction to minimize harm to SGCN species and their habitats.

3.0.0.21 Conduct long-term monitoring to determine the impacts of the fish and shellfish aquaculture industries on focal and non-focal SGCN and their habitats (i.e., NJ bays, estuaries, ocean areas). Assess the success of management actions implemented to minimize these impacts and make specific recommendations to the NJ DEP regarding how such management efforts may be improved to minimize harm to wildlife and their habitats.

3.0.0.22 Develop, implement and evaluate the success of a habitat improvement and restoration program to restore cold-water fish habitat, ecosystems and populations.

3.0.0.23 Identify (through wildlife and aquatic system surveys/studies, literature searches, review of available data, enlistment of species experts, etc.) and research water quality parameters for all [types of] aquatic systems for various SGCN populations.

3.0.0.24 Identify (through aerial and topographic maps), and confirm through field surveys, potential vernal pools using standard protocols. Provide confirmed vernal pool locations (and when possible, a description of the pools condition) and species' presence data to NJ DEP for integration into the Biotics database, Landscape Project and permitting review processes.

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3.0.0.25 Identify pathways of migratory SGCN in the Atlantic Coastal and Marine Regions (through surveys/studies, literature searches, review of available data, enlistment of species experts, etc.) and use the data to help evaluate the potential short- and long-term impacts of wind turbines, radio towers, utility guy lines, and other tall coastal structures on migratory populations.

3.0.0.26 Conduct studies to evaluate the effectiveness of proactive species recovery plans for all endangered and threatened species including objectives and guidance pertaining to and the condition/status of critical and supporting habitats.

3.0.0.27 Evaluate the effectiveness of strategies to restrict human activity (e.g., recreational, maintenance work, etc.) from sensitive habitats/areas such as avian nesting sites, reptile and amphibian breeding areas (nesting or gestation/birthing and breeding pools, respectively), and bat hibernacula, and federal buffers for marine mammals through research and monitoring. Develop and provide NJ DEP and other appropriate governing agencies/commissions a summary of findings and recommendations to improve such efforts.

3.0.0.28 Evaluate best management practices for using mined sand or dredged material to improve habitat for wildlife, particularly for spawning horseshoe crabs and migrating shorebirds.

3.0.0.29 Conduct long-term monitoring of sensitive marine species habitats and migration and/or spawning areas to determine their continued use or changes as a result of habitat shifts or alterations that may warrant further management actions.

3.0.0.30 Conduct research to investigate the feasibility of managing and/or creating roosting habitats for migratory species (shorebirds, raptors, bats, songbirds and invertebrates) in appropriate areas along documented migratory corridors around the State.

3.0.0.31 Conduct short- and long-term studies (e.g., wildlife surveys and habitat assessments) to evaluate the effectiveness of vegetation management efforts to maintain, enhance and/or create roosting habitats for migratory species (shorebirds, raptors, bats, songbirds and invertebrates) in appropriate areas along documented migratory corridors around the State.

3.2 Research, survey or monitoring - fish and wildlife populations: *Collection and analysis of data as part of research, survey or monitoring primarily focused on fish and wildlife populations Note: includes compilation, management, synthesis, analysis and reporting of spatial and non-spatial data Note: Code work on fish and wildlife diseases to Wildlife Disease Management within Direct Management of Natural Resources.*

3.2.0 Data deficiency

3.2.0.1 Division of Fish and Wildlife should maintain a robust, up-to-date database and mapping of species occurrences.

3.2.0.2 Conduct species status assessments using the Delphi Technique and review of available data and literature on fish and wildlife (including marine animals) to maintain accurate legal status categorization of native wildlife.

3.2.0.3 Survey for and monitor populations of freshwater aquatic focal SGCN to assess the populations' demography, trends, condition, distribution, etc.

3.2.0.4 Conduct long-term monitoring of the impacts of contaminants to vulnerable wildlife to determine the magnitude of exposure within populations and around the State, the impacts to those species, in particular SGCN, and investigate the feasibility of mitigating for such impacts. Maintain records on exposure of vulnerable wildlife to environmental toxins (such as flame retardants and endocrine disruptors), so that sources may be identified and controlled or eliminated.

3.2.0.5 Prevent or ameliorate near-term impacts of climate change throughout the State by developing, implementing and monitoring/evaluating habitat management strategies that will establish/improve habitat resilience (e.g., shorelines of the coast and Delaware Bay, forested habitats of the Pinelands and Skylands) that benefits wildlife inhabiting these areas, in particular within the coastal and Delaware Bay areas.

3.2.0.6 Develop, implement and conduct studies to evaluate the effectiveness of methods implemented to reduce road mortality of wildlife (e.g. wildlife underpasses, road closures).

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3.2.0.7 Track (via a database that includes a GIS component) and research problematic species and diseases to determine their distribution, impacts on SGCN wildlife/wildlife communities, and develop potential control measures.

3.2.0.8 Implement and conduct long-term monitoring of control measures aimed at minimizing the impacts of problematic species and/or diseases to evaluate the effectiveness of such efforts and to identify and incorporate additional strategies as appropriate.

3.2.0.9 Maintain an inventory of invasive insect distribution and where they exist, conduct long-term monitoring of habitat conditions to assist in developing strategies to combat the impacts to SGCN habitats. Report potential infestations to NJ DEP.

3.2.0.10 Evaluate the effectiveness of sanitation/decontamination protocols in minimizing the transference of wildlife diseases and invasive plant species.

3.2.0.11 Investigate the impacts of ORV use as a mechanism to spread wildlife diseases and invasive plant species to native wildlife and habitats. Integrate this information when mapping undeveloped roads and trails to identify potentially sensitive areas in northern NJ forests.

3.2.0.12 Investigate the impacts of ORV use and ORV-created noise on terrestrial and aquatic wildlife behavior and the impact of direct mortality from vehicle strikes. Integrate this information when mapping undeveloped roads and trails to identify potentially sensitive areas in northern NJ forests.

3.2.0.13 Continue the research and studies undertaken by the State's Shad and River Herring/Alewife Technical Working Group regarding an assessment to determine if the herring should be listed as a "stock in the fishery."

3.2.0.14 Identify spawning areas for species such as Atlantic and Shortnose sturgeon, Alewife, and Blueback Herring, and document shifts of these areas over time. Assess their reproductive success over time, including fecundity, early life stages and juvenile success, etc.

3.2.0.15 Identify and compile information regarding critical time periods in which freshwater SGCN fish are vulnerable (e.g., spawning periods) using literature searches, review of available data, enlistment of species experts, etc.).

3.2.0.16 Conduct long-term monitoring to evaluate the success of marine conservation zone designations on marine SGCN.

3.2.0.17 Conduct monitoring at constructed wind farms (within or outside of NJ) to assess the impacts on migratory species (birds, bats, insects) and determine if NJ's land use planning efforts and/or smart-growth plans need to be revised.

3.2.0.18 Conduct baseline surveys/inventories to better understand the distribution of fish and invertebrate (including freshwater mussels) populations.

3.2.0.19 Develop, implement and evaluate aquaculture practices in coastal areas that are compatible with the recovery of SGCNs and industry needs.

3.2.0.20 Evaluate the effectiveness of BMPs for mosquito control methods that may produce benefits for coastal marsh dependent SGCN wildlife, including but not limited to high-marsh nesting birds and migrating shorebirds and landbirds.

3.2.0.21 Investigate the effects of mosquito control methods on freshwater aquatic and semi-aquatic SGCN including but not limited to, amphibian, fish, dragonfly, and damselfly populations.

3.2.0.22 Evaluate the effectiveness of predator-control techniques aimed at improving SGCN populations and methods to minimize the impact of those species carrying parasites or diseases that may impact SGCN (e.g., raccoon roundworm kills Allegheny woodrat).

3.2.0.23 Conduct long-term monitoring to evaluate the accuracy of and make necessary changes to a GIS predictive model of right whale migration routes off the NJ coast.

3.2.0.24 Develop, implement and evaluate the effectiveness of BMPs for lighting of/on tall structures that minimize harm to and/or disorient wildlife, in particular but not limited to migratory birds, bats and invertebrates. Implement BMPs into state, county and local permitting processes.

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3.2.0.25 Conduct short- and long-term evaluations of structural stabilization strategies implemented at bat hibernacula and identify needed improvements to ensure structural soundness and of the potential impacts on bat hibernacula (i.e., the bats and internal conditions) when hibernacula are gated.

3.2.0.26 Develop, implement and evaluate efforts to remove horseshoe crab impingement hazards, and provide recommendations of potential improvements, if warranted.

3.2.1 Abundance determination: *Determination of relative abundance or estimation of size of fish and wildlife populations (e.g., adult population estimate, juvenile relative abundance).*

3.2.1.1 Identify (through literature searches, review of available data, enlistment of habitat and/or species experts, etc.) population abundance and trends for SGCN using standardized survey protocols. Provide data to NJ DEP for integration into the Biotics database, Landscape Project Map and permitting review processes.

3.2.1.2 Conduct wildlife surveys on resident and migratory SGCN regarding their population abundance and trends.

3.2.2 Age, size and sex structure: *Determination of age, size or sex structure of fish and wildlife populations (e.g., age and growth, length frequency, sex ratio).*

3.2.2.1 Conduct wildlife surveys on resident and migratory SGCN regarding their survivorship.

3.2.3 Baseline inventory: *Baseline survey and inventory to understand distribution of fish and wildlife populations.*

3.2.3.1 Identify the distribution of whales (particularly right whale) during seasonal migrations. Methods include but are not limited to: a) Conduct surveys in shipping lane vicinities and along the coast during whale migration to determine the seasonal distribution, b) Develop a predictive GIS model (based on available species occurrence information and habitat data) to predict right whale migration routes off the NJ coast, and c) Identify whale distribution and right whale migration routes through the participation in the East Coast's Sightings Advisory System for mariners.

3.2.3.2 Identify (through surveys/studies, literature searches, review of available data, enlistment of species experts, etc.) suitable areas for marine conservation zone designation and promote policies and regulations that support the designation of such areas.

3.2.3.3 Develop a database of the distribution of seabird species (near-shore migrants and pelagic birds).

3.2.3.4 Establish population estimates and trends for all managed fish species.

3.2.3.5 Investigate and develop strategies to reduce "by-catch" of SGCN and other non-target species. Present findings and strategies to NJ DEP and conservation organizations for review and possible implementation. Develop a database documenting by-catch for use in management planning decisions.

3.2.3.6 Investigate the feasibility and potential for success of conducting genetic rescue through translocation and/or reintroduction of animals into suitable habitat that was historically occupied to increase genetic diversity and reconnect isolated populations. Methods of investigation should include, but are not limited to, thorough literature reviews, expert opinions, identifying potential pitfalls (e.g., species' fidelity to their range or critical areas), and an examination of historic and current SGCN population distribution and suitable habitat availability.

3.2.3.7 Identify roads or portions of roads, paved or unimproved (through site surveys, land use/land cover assessments and analyses, review of available data, enlistment of species experts, etc.) with high incidences of road mortality and/or presence of snakes, turtles, medium-sized and large mammals. Conduct assessments of the roads and incorporate information into a database that includes descriptions (e.g., qualifiers to help prioritize the roads' risk to wildlife) and a GIS component of the locations of such areas. Share this information with appropriate organizations and/or agencies working to implement measures (e.g., wildlife passages, road closures) to minimize the risk to these species.

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3.2.3.8 Investigate the need to stabilize important bat hibernacula (e.g., structural soundness) and install the necessary supports.

3.2.3.9 Investigate hazardous environmental issues that may impact grassland invertebrates.

3.2.4 Food habits: *Studies on food habits of fish and wildlife species or their utilization as prey.*

3.2.4.1 Monitor and investigate the populations and health of SGCN prey/food resources for those SGCN whose populations are thought to be limited due wholly or in part to a lack of food resources or toxins in food resources.

3.2.5 Genetics: *Genetics studies of fish and wildlife populations (e.g., population connectivity, hybridization).*

3.2.5.1 Investigate the feasibility and potential for success of conducting genetic rescue through translocation and/or reintroduction of animals into suitable habitat that was historically occupied to increase genetic diversity and reconnect isolated populations. Methods of investigation should include, but are not limited to, thorough literature reviews, expert opinions, identifying potential pitfalls (e.g., species' fidelity to their range or critical areas), and an examination of historic and current SGCN population distribution and suitable habitat availability.

3.2.7 Population assessment: *Assessments of biological information to determine status of fish and wildlife populations (e.g., population viability analysis, fisheries stock assessment).*

3.2.7.1 Conduct species status assessments using the Delphi Technique and review of available data and literature on fish and wildlife (including marine animals) to maintain accurate legal status categorization of native wildlife.

3.2.7.2 Conduct studies to evaluate the effectiveness of proactive species recovery plans for all endangered and threatened species to meet and maintain recovery goals.

3.3 Research, survey or monitoring - habitat: *Collection and analysis of data as part of research, survey or monitoring primarily focused on fish and wildlife habitats Note: includes compilation, management, synthesis, analysis and reporting of spatial and non-spatial data.*

3.3.1 Baseline inventory: *Baseline survey and inventory to understand distribution of fish and wildlife habitat quality and quantity (e.g., wetland mapping).*

3.3.1.1 Conduct habitat assessments of significant natural and/or unique communities to Identify threats to native terrestrial and aquatic habitats through systematic monitoring, review of available data, enlistment of habitat management and/or species experts, etc. Incorporate findings into a database that includes descriptions/qualifiers of the habitats, identifies and values/qualifies the threats, and includes a GIS component of the locations of the assessed areas. Share this information with landowners/managers (e.g., federal, state and local government agencies or non-government organization).

3.3.1.2 Identify (through surveys/studies, literature searches, review of available data, enlistment of species experts, etc.) resident and migratory SGCN habitats. Investigate their suitability for the various life history requirements of the species that dependent upon them to determine the ability for maintaining applicable SGCN populations in perpetuity.

3.3.1.3 Identify (through surveys/studies, literature searches, review of available data, enlistment of species experts, etc.) remaining high and low marsh habitats with natural buffers and stable water levels that provide suitable habitat for SGCN and marsh habitats that would benefit from restoration. Conduct research to assess their condition for nesting, migrating and wintering birds.

3.3.1.4 Identify (through surveys/studies, literature searches, review of available data, enlistment of species experts, etc.) and investigate the suitability of corridors that connect large, contiguous tracts of similar habitats to increase their effective size (i.e., forest with forest, grassland with grassland, wetlands with wetlands, etc.) for dependent SGCN.

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			3.3.1.5 Identify areas (through surveys/studies, literature searches, review of available data, enlistment of species experts, etc.) where habitat restoration and/or enhancement would benefit wildlife SGCN.
			3.3.1.6 Identify areas (through surveys/studies, literature searches, review of available data, enlistment of species experts, etc.) that could, through revegetation and/or enhancement efforts, become suitable travel corridors connecting and increasing the effective size of conserved habitats for SGCN.
			3.3.1.7 Map and prioritize existing and potential areas for early succession forest management. Share the results with state, county and municipal planners.
			3.3.1.8 Assess the availability and suitability of forest habitats for SGCN species (particularly reptiles and amphibians, birds, pollinators, and tiger beetles) in southern forests since Superstorm Sandy.
			3.3.1.9 Inventory forests throughout northern New Jersey to develop a baseline characterization of the structure and composition of habitats and identify deficient forest habitat types.
			3.3.1.10 Identify (through surveys/studies, literature searches, review of available data, enlistment of species experts, etc.) and document fish SGCN habitats by plotting their distributions in GIS and submitting the data to the State for integration into the DEP's Biotics database.
			3.3.1.11 Identify (through surveys/studies, literature searches, review of available data, enlistment of species experts, etc.) and investigate the quality and importance of areas with submerged aquatic vegetation to benefit waterfowl, finfish, and shellfish species.
			3.3.1.12 Conduct an initial assessment of and document the availability and suitability of intact, preserved forest blocks containing vernal pools within the possible range of Eastern Tiger Salamander, which appear under-represented on a landscape scale. Incorporate findings into a database that includes descriptions and qualifiers of the habitats, and a GIS component of the locations of such areas. Share this information with appropriate organizations and/or agencies working to implement habitat restoration and enhancement strategies to provide opportunities for this salamander to disperse and expand its current range.
			3.3.1.13 Conduct wildlife surveys to confirm or reconfirm locations with suitable hydrologic conditions for tiger salamanders and associated vernal pool herpetofauna.
			3.3.1.14 Compile information (obtained through literature reviews, communication with other States along the Atlantic coast, academia, etc.) regarding the impacts of above water operation of wind turbines on migratory marine birds and bats. Provide data to appropriate governing agencies and/or State commissions for integration into permitting review processes.
			3.3.1.15 Conduct a literature review to determine the potential impacts of underwater vibrational noise on marine mammals, sea turtles and fishes emanating from offshore wind turbines during routine operations.
			3.3.1.16 Gather "best information" for spatial modeling and update/create a current model/depiction of anticipated habitat shifts from sea-level rise, flooding, etc.
			3.3.1.17 Identify and map undeveloped roads and trails in all conserved forests, and create a database of locations. Integrate information regarding potentially sensitive areas.
			3.3.1.18 Conduct an assessment using available data regarding SGCN population numbers/trends and demography, on-going threats, habitat changes, etc. to determine if directed management efforts are needed to reach or maintain viable population levels.
			3.3.1.19 Identify and codify legal ORV access areas on state (and if appropriate, other conserved) lands. Provide GIS mapping to the landowner for potential use in directing such recreational activities.

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3.3.1.20 Identify areas (through surveys/studies, literature searches, review of available data, enlistment of habitat management and/or species experts, etc.) where invasive, non-indigenous plants and animals are either already established or are becoming established. Create a system for reporting and qualifying new locations of invasive species and for prioritizing areas for control measures according to the potential level of impact on the ecosystem and SGCN and the likelihood of success. Researchers and contractors encountering invasive plant species while performing plant and/or forest inventories on state or other conserved lands and/or private lands should report invasive plant species through the New Jersey Invasive Species Strike Team phone application.

3.3.1.21 Conduct comprehensive baseline surveys of all marsh islands; surveys to include, but are not limited to, documented elevations, and assessments of the habitat's current condition and vulnerability of dependent SGCN species in relation to the increased inundation rate.

3.3.1.22 Identify, assess and prioritize marsh habitats for restoration where various management tools (such as increasing salinity through the management of water levels or chemical applications) may be effective in reducing the presence of phragmites.

3.3.1.23 Identify areas (through surveys/studies, predictive modeling, review of available data, enlistment of habitat management and/or species experts, etc.) where the State can allow coastal marsh migration due to sea level rise, and target these areas for land acquisition and/or land management to accommodate this transition. Targeted areas should include underdeveloped areas adjacent to unprotected coastal marshes.

3.3.1.24 Conduct regular investigations of SGCN habitat health and biodiversity on public and private lands to identify locations in need of revegetation, reduction of over-abundant, native wildlife and/or exotic species, conservation focal areas requiring limitations on human activity, etc.

3.3.1.25 Compile an inventory of all horseshoe crab impingement hazards and share with permitting agencies, and the fisheries organizations and industry.

3.3.1.26 Survey all historic locations and unsurveyed suitable habitats to identify populations of freshwater aquatic focal species.

3.3.1.27 Develop a matrix that lists every commercial and recreational fishery and aquaculture facility that operates in state waters and for each fishery listed, provide details regarding their fishing seasons, gear descriptions, locations and number of fishers. Add a GIS component to overlay species of concern and sensitive areas.

3.3.1.28 Identify key habitats for the potential allowance of natural coastal processes without interfering through shoreline stabilization, etc. and evaluate the risks and benefits if coastal migration was permitted to occur naturally. Create a GIS map of the identified areas; provide the assessment and mapping to local towns and other appropriate governing agencies.

3.3.1.29 Identify coastal wildlife habitats unimpacted by development and/or at greatest risk of habitat loss to help guide enlightened coastal stabilization efforts (i.e., use of soft stabilization) to reduce the impacts on wildlife and their habitats.

3.3.1.30 Using available data, model a comprehensive Marine Submerged Aquatic Vegetation Mapping project (similar to the Statewide freshwater wetlands mapping project) of sufficient quality and integrity that it could support the NJ DEP's coastal regulatory programs. Continue to conduct surveys to gather additional data to test and improve the model.

3.3.2 Monitoring: *On-going monitoring of fish and wildlife habitat quality and quantity (e.g., annual early successional habitat survey, artificial reef condition).*

3.3.2.1 Evaluate the effectiveness of forest management/silviculture strategies that enhance and maintain critical core forests as appropriate for targeted species (e.g., for many SGCN forest birds, "core" forest would include the forest area >90 meters from the forest edge), in perpetuity, to benefit interior forest and disturbance-sensitive SGCN through research and monitoring.

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3.3.2.2 Conduct long-term monitoring of resident and migratory SGCN habitats using standardized survey protocols to determine changes in habitat quality/suitability and threats (e.g., habitat loss and degradation, increased edge habitat, water quality) and other variables that may impact their long-term persistence in the State and to provide information needed for determining causes of population declines and understanding metapopulation dynamics.

3.3.2.3 Continue to update wildlife and habitat databases and revise models of critical SGCN habitats using the most current data available and where lacking, develop new SGCN and/or habitat models as data on species habitat requirements and applicable GIS data layers become available.

3.3.2.4 Protect water quality and aquatic-dependent species by appropriately designating Category 1 waters and enforcing protective regulations. Seek appropriate classifications for stream segments based on Endangered and Threatened Status and/or the Index of Biotic Integrity (IBI) results that do not fulfill Category One requirements.

3.3.2.5 Conduct long-term monitoring of water quality of SGCN aquatic habitats (and aquatic systems feeding into those habitats) to evaluate protection and management efforts to reduce, if not eliminate, chemical contamination, siltation, eutrophication, and other forms of pollution/contamination of aquatic systems.

3.3.2.6 Investigate the effectiveness and potential impacts of marsh management techniques by studying the effects of Open Marsh Water Management on wildlife species, in particular high marsh nesting birds and waterfowl. Evaluate best management practices as appropriate.

3.3.2.7 Conduct studies on land use practices such as ditching, impounding, dredging, open marsh water management, burning, and marsh restoration to evaluate the effectiveness and potential impacts on marsh-dependent SGCN.

3.3.2.8 Evaluate the effectiveness of current prescribed burning practices on Pinelands dependent species.

3.3.2.9 Investigate the effectiveness of various silviculture techniques for enhancing forests for forest-dependent SGCN.

3.3.2.10 Evaluate the efficacy and success of different management techniques (e.g., ecologically-based forestry activities, prescribed burns) that might be used to mimic the historic role of fire and other natural disturbances in shaping an ecosystem.

3.3.2.11 Evaluate and compare the effectiveness of delayed mowing of warm season grass fields versus cool season hay fields to benefit grassland-dependent species.

3.3.2.12 Evaluate and compare the effectiveness of different management techniques (e.g., prescribed burning, mowing, brush-hogging, etc.) for maintaining suitable habitat for grassland-dependent species and species dependent upon early successional habitats.

3.3.2.13 Evaluate the effectiveness of management strategies (e.g., timing restrictions for mowing, cooperative agreements with utility companies for maintenance of rights-of-ways) that maintain and enhance large existing areas of grassland in perpetuity. Focus on habitat patches that can be managed to enhance the total size of suitable grassland habitat and create interspersed early-successional habitat.

3.3.2.14 Research and evaluate the effectiveness of water quality management practices on water-dependent and semi-dependent SGCN, particularly those practices associated with permitting or mitigation actions.

3.3.2.15 Investigate the effectiveness of management techniques implemented to eliminate invasive terrestrial and aquatic plant species on private and public lands, and/or within sensitive and/or important habitats for SGCN.

3.3.2.16 Evaluate the effectiveness of best management practices (BMPs), protective strategies, and guidelines for maintaining and enhancing healthy, SGCN-associated terrestrial and aquatic habitats and associated riparian habitats, and to minimize (if not avoid) incidental take of resident and migratory fish and wildlife and/or disturbance to them (in particular during breeding periods) on public and private lands for maintaining populations in perpetuity.

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3.3.2.17 Conduct long-term habitat monitoring to determine the continued availability and suitability of intact, preserved forest blocks containing vernal pools within the possible range of Eastern Tiger Salamander. Update the database (to be developed during baseline assessments) regarding the forests' and vernal pools' conditions. Share this information with appropriate organizations and/or agencies working to implement habitat restoration and enhancement strategies to provide opportunities for this salamander to disperse and expand its current range.

3.3.2.18 Conduct long-term monitoring of and wildlife surveys at locations with suitable hydrologic conditions for Eastern Tiger Salamanders and associated vernal pool herpetofauna.

3.3.2.19 Once baseline data on the marsh islands' and associated SGCN species' vulnerability to inundation is completed, continue to conduct long-term monitoring the islands to determine sustainability for wildlife dependent on these areas.

3.3.2.20 Once a system is developed for reporting and qualifying new locations of invasive species, develop, implement and monitor/evaluate invasive species removal strategies at identified locations. Priority should be given to those areas critical to SGCN and/or contain unique and/or rare plant communities supporting SGCN and/or other fish/wildlife species.

3.3.2.21 Develop, implement and evaluate the effectiveness of management strategies use to restore marsh habitat (e.g., phragmites reduction).

3.3.2.22 Conduct short- and long-term monitoring of the current natural processes affecting sediment transport along the coast. Share findings with organizations/agencies attempting to design beach nourishment projects in a manner that will be beneficial to wildlife.

3.3.2.23 Conduct long-term monitoring of marine submerged aquatic vegetation and update the Marine Submerged Aquatic Vegetation Mapping [to be developed under baseline activities] to provide the NJ DEP's coastal regulatory programs with the most current data.

3.3.2.24 Conduct regular inventories of forests throughout northern New Jersey to characterize the changing structure and composition of habitats and monitor forest conditions.

3.5 Techniques development: *Research and development of techniques important for the conservation and management of fish and wildlife.*

3.5.1 Artificial propagation studies: *Research on artificial propagation of fish and wildlife (e.g., nutrition studies, culture methods).*

3.5.1.1 Conduct studies to evaluate the impacts (beneficial and detrimental) of aquaculture on migratory shorebirds, waterfowl, finfish, shellfish and other SGCN and their habitats, including evaluation of the relative effects of location and aquaculture techniques.

3.5.1.2 Develop and conduct studies that evaluate relative efficacy and feasibility of management actions designed to minimize adverse impacts and enhance beneficial effects.

3.5.3 Habitat restoration methods: *Development or improvement of methods to restore habitats and natural processes (e.g., evaluations of water level fluctuations).*

3.5.3.1 Work with land management agencies to determine the appropriate actions needed to restore/reclaim degraded habitat for the documented/target SGCN.

3.5.3.2 Develop management strategies to improve the availability of prey/food resources for SGCN whose populations are thought to be limited due wholly or in part to a lack of (or contaminated) food resources. Monitor and investigate the management strategies over time to determine success and/or the need to revise methods.

3.5.3.3 Develop/improve management techniques that might be used to mimic the historic role of fire and other natural disturbances in shaping an ecosystem.

3.5.3.4 Modify best management practices of Open Marsh Water Management based on evaluation of the effectiveness and potential impacts of marsh management techniques on wildlife species, in particular high marsh nesting birds and waterfowl.

3.5.3.5 Develop best management practices for using mined sand or dredged material to improve habitat for wildlife, particularly for spawning horseshoe crabs and migrating shorebirds.

3.5.3.6 Develop/improve management strategies to repair marshes and associated beaches damaged by salt hay farm/dike abandonment for all bay shore areas currently degraded.

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3.5.3.7 Develop/improve forest management/silviculture strategies that enhance and maintain critical core forests as appropriate for targeted species (e.g., for many SGCN forest birds, "core" forest would include the forest area >90 meters from the forest edge), in perpetuity, to benefit interior forest and disturbance-sensitive SGCN through research and monitoring.

3.5.3.8 Develop best management practices (BMPs), protective strategies, and guidelines for maintaining and enhancing healthy, SGCN-associated terrestrial and aquatic habitats and associated riparian habitats, and to minimize (if not avoid) incidental take of resident and migratory fish and wildlife and/or disturbance to them (in particular during breeding periods) on public and private lands for maintaining populations in perpetuity.

3.5.3.9 Develop strategies to combat the impacts of diseases/pathogens impacting SGCN and/or their habitats.

3.5.3.10 Develop a habitat improvement and restoration program to restore cold-water fish habitat.

3.5.3.11 Develop strategies to protect native terrestrial and aquatic habitats and dependent SGCN species from the identified threats.

3.5.3.12 Develop management actions to minimize the documented adverse impacts and reduce risks of potential adverse impacts of aquaculture on migratory shorebirds and other SGCN, including waterfowl, finfish, and shellfish and their habitats.

3.5.3.13 Developing engineering standards that embrace both shore protection/resiliency and habitat creation for shorebirds, horseshoe crabs and other coastal species along the Atlantic and Delaware Bay coasts.

3.5.3.14 Develop aquaculture practices in the Delaware Bay that are compatible with the recovery of SGCN.

3.5.3.15 Modify management practices based on the effects of pesticides, herbicides and other biological controls on critical and supporting SGCN habitats.

3.5.3.16 Develop/improve strategies to restrict human activity (e.g., recreational, maintenance work, etc.) from sensitive habitats/areas such as avian nesting sites, reptile and amphibian breeding areas (nesting or gestation/birthing and breeding pools, respectively), and bat hibernacula, and federal buffers for marine mammals. Methods may include, but are not limited to, managing the landscape to deter access, diverting recreational and other activities from sensitive areas during critical periods through permit processes or blocking access (trails, roads, etc.), posting (if appropriate), increasing law enforcement presence, conducting management activities at appropriate times to avoid disturbance and/or harm to wildlife (e.g., habitat management, beach raking, etc.), and decreasing noise and light pollution.

3.5.3.17 Investigate and improve marsh management techniques to benefit critical wildlife species, in particular high marsh nesting birds and waterfowl.

3.5.3.18 Develop recommendations to improve methods on land use practices such as ditching, impounding, dredging, open marsh water management, burning, and marsh restoration based on potential impacts on marsh-dependent SGCN.

3.5.3.19 Work with foresters to develop prescribed burning practices for Pinelands dependent species that increase or maintain habitat quality for these species in the Pinelands.

3.5.3.20 Develop guidance on various silviculture techniques for enhancing forests for forest-dependent SGCN.

3.5.3.21 Develop management techniques (e.g., ecologically-based forestry activities, prescribed burns) that might be used to mimic the historic role of fire and other natural disturbances in shaping an ecosystem.

3.5.3.22 Identify (through surveys/studies, literature searches, review of available data, enlistment of habitat management and/or species experts, etc.) and modify management strategies (e.g., timing restrictions for mowing, cooperative agreements with utility companies for maintenance of rights-of-ways), based on research, that maintain and enhance large existing areas of grassland in perpetuity.

3.5.3.23 Revise water quality management practices based on research on water-dependent and semi-dependent SGCN, particularly when associated with permitting or mitigation actions.

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3.5.3.24 Based on research, modify management techniques implemented to eliminate invasive terrestrial and aquatic plant species on private and public lands, and/or within sensitive and/or important habitats for SGCN.

3.5.3.25 Use data regarding SGCN population numbers/trends and demography, on-going threats, habitat changes, etc. to develop the necessary management strategies to reach or maintain viable population levels.

3.5.3.26 Amend management strategies of gating bat hibernacula and/or installing additional supports for structural soundness based on the effectiveness and potential impacts on bat hibernacula (bats and internal conditions).

3.5.3.27 Conduct an assessment and develop a location list of available equipment for boom deployment during oil spills.

3.5.3.28 Conduct baseline surveys to determine areas in Barnegat and Great bays appropriate for eelgrass restoration. Develop necessary techniques to implement restoration efforts.

3.5.3.29 Explore the use of alternative vegetation (i.e., commodity crops) to address agriculture concerns.

3.5.4 Fish and wildlife research, survey and management techniques: *Development or improvement of research techniques or management tools (e.g., tag retention studies, sampling device improvements, testing of animal control devices).*

3.5.4.1 Develop studies to evaluate management strategies to improve the availability of prey/food resources for SGCN whose populations are thought to be limited due wholly or in part to a lack of (or contaminated) food resources. Monitor and investigate the management strategies over time to determine success and/or the need to revise methods.

3.5.4.2 Develop, implement, monitor and evaluate management strategies to reduce the impacts of herbivory on native vegetation and the degradation of habitats supporting SGCN by invasive and/or native, over-abundant wildlife species including but not limited to mute swans, Canada geese, beaver and white-tailed deer.

3.5.4.3 Investigate alternative saltmarsh mosquito control methods that may produce benefits for coastal marsh dependent SGCN wildlife, including but not limited to high-marsh nesting birds and migrating shorebirds and landbirds.

3.5.4.4 Investigate the effects of mosquito control methods on freshwater aquatic and semi-aquatic SGCN including but not limited to, amphibian, fish, dragonfly, and damselfly populations.

3.5.4.5 Develop and implement strategies to combat the impacts of diseases/pathogens impacting SGCN and/or their habitats, track disease occurrences and monitor/research impacts to SGCN populations and their habitats.

3.5.4.6 Investigate the feasibility of mitigating for the impacts of contaminants to vulnerable wildlife, particularly SGCN. Maintain records on exposure of vulnerable wildlife to environmental toxins (such as flame retardants and endocrine disruptors), so that sources may be identified and controlled or eliminated.

3.5.4.7 Investigate the feasibility and potential for success of conducting genetic rescue through translocation and/or reintroduction of animals into suitable habitat that was historically occupied to increase genetic diversity and reconnect isolated populations. Methods of investigation should include, but are not limited to, thorough literature reviews, expert opinions, identifying potential pitfalls (e.g., species' fidelity to their range or critical areas), and an examination of historic and current SGCN population distribution and suitable habitat availability.

3.5.4.8 Develop a habitat improvement and restoration program to restore cold-water fish ecosystems and populations.

3.5.4.9 Conduct studies to evaluate the impacts of roads on SGCN and develop, implement and conduct studies to evaluate the effectiveness of methods to reduce road mortality of wildlife (e.g. wildlife underpasses, road closures).

3.5.4.10 Develop BMPs for lighting of/on tall structures that minimize harm to and/or disorientation of wildlife, in particular but not limited to migratory birds, bats and invertebrates.

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3.5.4.11 Develop aquaculture practices in the Delaware Bay that are compatible with the recovery of SGCN.

3.5.4.12 Investigate and develop strategies to reduce "by-catch" of SGCN and other non-target species. Present findings and strategies to NJ DEP and conservation organizations for review and possible implementation. Develop a database documenting by-catch for use in management planning decisions.

3.5.4.13 Develop/improve strategies to restrict human activity (e.g., recreational, maintenance work, etc.) from sensitive habitats/areas such as avian nesting sites, reptile and amphibian breeding areas (nesting or gestation/birthing and breeding pools, respectively), and bat hibernacula, and federal buffers for marine mammals. Methods may include, but are not limited to, managing the landscape to deter access, diverting recreational and other activities from sensitive areas during critical periods through permit processes or blocking access (trails, roads, etc.), posting (if appropriate), increasing law enforcement presence, conducting management activities at appropriate times to avoid disturbance and/or harm to wildlife (e.g., habitat management, beach raking, etc.), and decreasing noise and light pollution.

3.5.4.14 Develop and implement agreements, and update existing agreements, with government agencies regarding the protection of critical SGCN habitats (e.g., significant breeding populations of beach nesting birds, colonial waterbird nesting areas, bat colonies, etc.).

3.5.4.15 Investigate the success of management strategies used to protect and/or enhance SGCN populations and when appropriate, aid in identifying failures/resource problems and issues, and developing new strategies.

3.5.4.16 Use data regarding SGCN population numbers/trends and demography, on-going threats, habitat changes, etc. to determine if directed management efforts are needed to reach or maintain viable population levels and develop the necessary management strategies.

3.5.4.17 Investigate new, non-invasive techniques for SGCN population evaluation through literature review, expert opinion, trial studies (if low risk), etc.

3.5.4.18 Investigate the effectiveness of survey techniques through selected “ground truthing” and literature and peer review in order to increase efficacy of survey, minimize surveyor bias and error, and increase accuracy of trend data.

3.5.4.19 Develop reliable, standardized survey and monitoring protocols for SGCN species, for which none currently exist, and their habitats.

3.5.4.20 Evaluate the effectiveness and potential impacts on bat hibernacula (bats and internal conditions) of gating bat hibernacula and/or installing additional supports for structural soundness. Amend management strategies as needed.

3.5.4.21 Develop BMPs to address problematic species and diseases of unknown origin.

3.5.4.22 Investigate the efficacy of implementing strategies to minimize or eliminate disturbances to all SGCN (i.e., beyond their federal requirements) during military activities.

3.5.4.23 Reduce the impacts of entrainment, impingement and thermal discharge at power plants by working with conservation partners, academia, etc. to ensure that best available technologies are utilized wherever possible.

4 Education

4.1 Educator/Instructor training: *Training of educators/instructors on aquatic resources.*

4.1.0 Public education

4.1.0.1 Provide educational resources and training programs to private and public landowners, as well as schools, regarding the benefits and creation of backyard habitats for wildlife.

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4.1.1 Aquatic resource education: *Training of new instructors and teachers in aquatic resource education who will teach others Note: This includes teachers, nature center staff and camp counselors who attend ARE workshops, teachers who help the agency write curriculum, etc.*

4.1.1.1 Provide educational resources and training programs to teachers in aquatic resource education that includes information regarding climate change and sea-level rise for incorporation into the class curriculum and/or as the focus of school field trips.

4.1.1.2 Provide educational resources and training programs to teachers in aquatic resource education that includes information regarding how coastal stabilization negatively impacts wildlife by preventing natural processes for incorporation into the class curriculum and/or as the focus of school field trips.

5 Facilities and Areas

5.15 Wildlife Management Areas: *Facilities at Wildlife Management Areas.*

5.15.6 Roads

5.15.6.1 Clearly post areas/roads where vehicle access is permitted.

5.15.6.2 Clearly post areas/trails where vehicle access is not permitted.

6 Land and Water Rights Acquisition and Protection

6.0 Acquisition and protection strategies

6.0.0 Combined acquisition and protection strategies

6.0.0.1 Enhance and increase the effective size of critical migratory stopover habitats for songbirds, raptors, shorebirds, bats and invertebrates by securing adjacent habitats through an appropriate combination of fee title, non-fee title and landowner agreements.

6.0.0.2 Enhance and increase the effective size of SGCN habitats by protecting adjacent habitats that contribute to the overall size of the "core" area and/or provide a natural buffer, enhancing the suitability of the core area for SGCN, and/or connect conserved SGCN habitats through an appropriate combination of fee title, non-fee title and landowner agreements.

6.0.0.3 Secure and protect riparian and floodplain habitats, inland wetland habitats (marsh, vernal pool, fen, emergent shrubland, forest), and other aquatic habitats (including open waters) and/or biologically appropriate buffers to minimize degradation through an appropriate combination of fee title, non-fee title and landowner agreements.

6.0.0.4 Secure and protect fish SGCN habitats by protecting lands adjacent to fish SGCN habitats and/or aquatic systems feeding into such habitats through an appropriate combination of fee title, non-fee title and landowner agreements.

6.0.0.5 Secure and protect critical coastal habitats (beach/dune, scrub-shrub, forest, wetland, marsh, and marine and estuarine habitats) that provide nesting, migrating and wintering areas for SGCN birds, fish and other coastal SGCN through an appropriate combination of fee title, non-fee title and landowner agreements.

6.0.0.6 Secure and protect old-growth forest stands with large trees and/or stands that are approaching or being actively managed for old growth forests, in particular those within large, contiguous forest tracts, through an appropriate combination of fee title, non-fee title and landowner agreements.

6.0.0.7 Secure and protect critical SGCN forested habitat and minimize forest edge to benefit interior forest and disturbance-sensitive SGCN through an appropriate combination of fee title, non-fee title and landowner agreements.

6.0.0.8 Secure and protect scrub-shrub habitats for SGCN through an appropriate combination of fee title, non-fee title and landowner agreements.

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6.1 Land acquisition

6.1.1 Fee title: *Acquisition of lands through fee title acquisition.*

6.1.1.1 Use state, federal, and local land acquisition programs (e.g., Green Acres, Blue Acres, etc.) to acquire abandoned or failing bay shore communities and to relocate displaced people and infrastructure.

6.3 Conservation area designation: *Designation of a site or landscape as having unique and important value to fish and wildlife with or without legal protections (e.g., waterfowl breeding area, Marine Protected Area).*

6.3.0 Conservation area designation strategies

6.3.0.1 Promote the protection of critical migratory stopover habitats for songbirds, raptors, shorebirds, bats and invertebrates and enhance these lands by increasing the effective size through conservation area designations of stopover habitats and adjacent private lands.

6.3.0.2 Enhance and increase the effective size of SGCN habitats by protecting adjacent habitats that contribute to the overall size of the "core" area and/or provide a natural buffer, enhancing the suitability of the core area for SGCN and/or connect conserved SGCN habitats through conservation area designations.

6.3.0.3 Increase the protection of riparian and floodplain habitats, inland wetland habitats (marsh, vernal pool, fen, emergent shrubland, forest), and other aquatic habitats (including open waters) and/or biologically appropriate buffers to minimize degradation through conservation area designations.

6.3.0.4 Promote the protection of fish SGCN habitats by protecting lands adjacent to fish SGCN habitats and/or aquatic systems feeding into such habitats through conservation area designations.

6.3.0.5 Promote the protection of critical coastal habitats (beach/dune, scrub-shrub, forest, wetland, marsh, and marine and estuarine habitats) that provide nesting, migrating and wintering areas for SGCN birds, fish and other coastal SGCN through conservation area designations.

6.3.0.6 Promote the protection of old-growth forest stands with large trees and/or stands that are approaching or being actively managed for old growth forests, in particular those within large, contiguous forest tracts, through conservation area designations.

6.3.0.7 Promote the protection of critical SGCN forested habitat and minimize forest edge to benefit interior forest and disturbance-sensitive SGCN through conservation area designations.

6.3.0.8 Promote the protection of scrub-shrub habitats for SGCN through conservation area designations.

6.3.0.9 Promote the protection of critical marine habitats for SGCN through conservation area designations.

6.4 Private lands agreements: *Number of acres that are protected by agreement with private landowners, but which do not involve active habitat improvement Note: Used extensively within the Landowner Incentive Program.*

6.4.0 Private land agreement strategies

6.4.0.1 Enter into private lands agreements to expand control burns on private lands, in particular those adjacent to conserved lands to improve SGCN habitats.

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7 Law Enforcement

7.1 Law enforcement: *Enforcement of laws and regulations related to the protection of fish and wildlife.*

7.1.2 National Level

7.1.2.1 Enforce regulations to protect nesting bird colonies from human disturbance.

7.1.3 Sub-national Level

7.1.3.1 Enforce slow wake zones and marine conservation area regulations to protect aquatic vegetation.

7.1.3.2 Increase the number of law enforcement officers tending to wildlife issues to a reasonable number to sufficiently cover the State and marine waters.

7.1.4 Scale Unspecified

7.1.4.1 Improve enforcement of policies and/or regulations that promote the reduction of run-off and point and non-point source pollution into NJ's aquatic systems (streams, rivers, lakes/ponds, bays, ocean, wetlands, etc.).

7.1.4.2 Restrict human activity from staging areas for red knots and other migratory shorebirds through increasing law enforcement presence.

7.1.4.3 Increase law enforcement presence proximate to sensitive areas [e.g., avian nesting sites, in particular rookeries, and reptile and amphibian breeding areas (nesting or gestation/birthing and breeding pools, respectively)] to deter human activity and subsequent disturbance to SGCN.

7.1.4.4 Improve enforcement of policies/regulations aimed at protecting and preserving critical coastal and marsh habitats, and secure mitigation for losses that create an environmental benefit.

7.1.4.5 Enforce current policies and/or regulations to increase the ability to protect and preserve coastal habitats (beach/dune, scrub-shrub, forest, wetland, marsh, marine and estuarine habitats) that provide nesting, migrating, and wintering areas for SGCN birds, fish and other coastal SGCN, and implement and enforce amended policies/regulations.

7.1.4.6 Recruit law enforcement to assist in the protection and enhancement of SGCN populations, in particular endangered species, through improved awareness of species through trainings, partnerships, and other methods. Information should include but is not limited to: 1) Issues concerning illegal collection of reptiles, 2) Persecution of rare snakes, 3) Illegal recreational activities on public lands (e.g., off-road vehicles) and their impact on wildlife, 4) Identification of sensitive areas, critical sites and/or "hot-spots" for collection.

7.1.4.7 Increase law enforcement presence to enforce regulations governing recreational activities (e.g., the use of personal watercraft and off road vehicles, caving, rock climbing, etc.) on conserved lands and within other sensitive habitats, and discourage activities that cause harm or disturbance to vegetation, wetlands, fish and wildlife.

7.1.4.8 Implement policies that protect critical migratory stopover habitats for songbirds, raptors, shorebirds, bats and invertebrates.

7.1.4.9 Implement policies that improve and secure habitat connections between conserved SGCN habitats.

7.1.4.10 Implement policies that promotes expanding acreages and enhances the effective size of SGCN habitats by providing biologically appropriate buffers of native habitat surrounding SGCN habitats.

7.1.4.11 Implement and enforce policies/regulations that will increase the ability to protect and preserve coastal habitats (beach/dune, scrub-shrub, forest, wetland, marsh, and marine and estuarine habitats) that provide nesting, migrating, and wintering areas for SGCN birds, fish and other coastal and aquatic SGCN.

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7.1.4.12 Implement policies and/or regulations that protect significant natural and/or unique communities in perpetuity.

7.1.4.13 Implement policies that protect vernal pool habitats to benefit SGCN that rely upon them and promotes connectivity of SGCN populations.

7.1.4.14 Implement policies that protect existing and developing old-growth forest stands with large trees, in particular those within large, contiguous forest tracts.

7.1.4.15 Implement policies that preserve and protect critical SGCN forested habitat and minimize forest edge to benefit interior forest and disturbance-sensitive SGCN.

7.1.4.16 Implement policies that protect and restore riparian areas.

7.1.4.17 Improve the enforcement of policies and/or regulations that protect wetlands, riparian and floodplain areas, and aquatic habitats (including open waters).

7.1.4.18 Increase law enforcement presence at important nesting areas on marsh islands to increase the likelihood of boat users acting in a manner that reduces disturbance to birds.

7.1.4.19 Implement policies that protect and restore scrub-shrub habitats to benefit shrub-dependent SGCN.

7.1.4.20 Implement policies and/or regulations with the objective of reducing "by-catch" of SGCN and other non-target species.

7.1.4.21 Implement regulations for lighting of/on tall structures that will minimize harm to and/or disorientation of wildlife, and enforce within state, county and local permitting processes.

7.1.4.22 Implement policies and/or regulations that prohibit the presence of managed cat colonies and trap, neuter and release programs in or near critical wildlife habitats.

7.1.4.23 Implement policies that minimize wildlife road mortality.

7.1.4.24 Implement protective measures to benefit urban-associated SGCN such as restricting human access, buffering sensitive areas with postings, noise and/or light restrictions in sensitive areas and/or during sensitive periods such as breeding, etc.

7.1.4.25 Encourage the enforcement of municipal laws regulating domestic pets that may predate on wildlife.

7.1.4.26 Educate law enforcement personnel that there may be unauthorized research projects taking place and to encourage them to investigate any activities that appear to be harmful to wildlife.

8 Outreach

8.1 Partner/stakeholder engagement: *Engagement of partners to achieve shared objectives and broader coordination across overlapping areas.*

8.1.0 Partner/stakeholder engagement strategies

8.1.0.1 Coordinate research efforts among government agencies, non-government conservation partners and other stakeholders to investigate the impacts of aquaculture on migratory shorebirds, waterfowl, finfish, shellfish and other SGCN and their habitats, to determine relative effects of farming locations and aquaculture techniques, and to evaluate management actions to minimize such impacts.

8.1.0.2 Develop a team of personnel from government entities, conservation organizations and other stakeholders engaged in oil/gas spill response for marine and freshwater habitats to develop a feasible plan for oil spill response and/or to amend NJ's current oil spill response plan that clearly outlines each organizations responsibilities and an assessment and location list of available equipment for boom deployment during oil spills.

8.1.0.3 Develop an outreach team of personnel from government entities, conservation organizations and other stakeholders to work together to collaboratively use social media campaigns to grow a constituency of NJ residents who have an elevated ecological and climate consciousness.

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8.1.0.4 Engage government agencies, conservation partners and other stakeholders in constructive dialogues encouraging them to influence policy change and the creation of incentives through a habitat bill and/or municipal ordinances for backyard habitat.

8.1.0.5 Engage government agencies, conservation partners and other stakeholders in discussions focused on establishing a long-term monitoring program for submerged aquatic vegetation distribution throughout Barnegat, Little Egg Harbor and Great Bay.

8.1.0.6 Engage government agencies, conservation partners and other stakeholders in discussions focused on sharing information regarding coastal and marine critical wildlife habitats, developing comprehensive mapping to assist in reducing impacts of energy production activities, and establishing a long-term monitoring program to update the data. Ensure this information is available to appropriate personnel for planning or response measures.

8.1.0.7 Engage government agencies, conservation partners and other stakeholders to collaboratively develop and implement an extensive educational/outreach program targeting coastal boating and recreation communities about eelgrass/widgeongrass, their impacts on marine environments, and the value, fragility and location of submerged aquatic vegetation beds and habitats.

8.1.0.8 Engage government agencies, conservation partners and other stakeholders to collaboratively develop and implement an extensive educational/outreach program targeting sportsmen's organizations and fisheries addressing the potential effects of over-harvesting wildlife and promote "catch and release".

8.1.0.9 Review the marine fish code enforcement policies relative to SGCN or sensitive game species' populations and fecundity, and amend the harvest quota or "bag limits" as needed, and address enforcement of such quotas.

8.1.0.10 Engage government agencies, conservation partners and other stakeholders to collaboratively develop and implement an extensive educational/outreach program targeting sportsmen's organizations and fisheries, as well as public constituents, addressing the potential impacts of over-harvesting wildlife can have on the ecological system and to promote "sustainable harvest".

8.1.0.11 Engage government agencies, conservation partners and other stakeholders to collaboratively develop and implement an extensive educational/outreach program targeting sportsmen's organizations and fisheries, as well as public constituents, addressing the unintended effects abandoned fishing gear, tackle and crab pots can have on wildlife, and promote the collection and/or reporting of abandoned items and their locations.

8.1.0.12 Engage government agencies, conservation partners and other stakeholders to collaboratively develop and implement an extensive educational/outreach program targeting sportsmen's organizations and fisheries, as well as public constituents, addressing the unintended effects fishing gear and tackle can have on wildlife.

8.1.0.13 Engage DOD in a constructive dialogue regarding strategies to minimize disturbances to all SGCN (i.e., beyond their federal requirements) from forest management and other practices on their lands.

8.1.0.14 Engage DOD in a constructive dialogue regarding strategies to minimize or eliminate disturbances to all SGCN (i.e., beyond their federal requirements) during military activities.

8.1.0.15 Engage government agencies, conservation partners and other stakeholders in discussions encouraging and supporting the creation of laws and policies requiring vegetative buffers of native plants on preserved farmland and state lands with agricultural leases or agreements.

8.1.0.16 Engage local governments in discussions regarding the importance of them adopting/passing ordinances which require assessing and addressing secondary impacts (i.e., ancillary prescribed burns, trespassers, ORV use, mosquitoes, deer, buffers) on biological resources when revising planning/zoning documents or granted site plan/subdivision approvals.

8.1.0.17 Engage municipalities in constructive dialogue to identify and minimize destruction of areas prioritized for early succession forest management.

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8.1.0.18 Engage NJDOT, NJ Transit Authority and other road management entities, wildlife conservation organizations/agencies (e.g., Division of Fish and Wildlife, New Jersey Conservation Foundation, Conserve Wildlife Foundation of NJ), and communities and citizens in discussions regarding the importance of and methods to enhance habitat connectivity, and work together to develop feasible strategies for ensuring that wildlife can disperse naturally and safely across roads and similar barriers to terrestrial and/or aquatic habitats.

8.1.0.19 Engage government agencies, conservation partners and other stakeholders to collaboratively develop a list of important projects, targeting SGCN and/or their habitat, as a guide for graduate student research. Distribute the list and contact information to all State colleges and universities.

8.1.0.20 Organize a small focal group of government and non-government agencies/organizations responsible for decisions regarding beach/dune management to share and coordinate their goals so that comprehensive planning can attempt to meet all needs.

8.1.0.21 Work with government agencies and environmental educators to develop educational resources and training programs, educate the public on the devastation human-subsidized and/or overabundant, native species cause to local nesting species, and provide expert guidance on how residents can help alleviate this threat.

8.1.0.22 Work with government agencies and environmental educators to develop educational resources and training programs, educate the public on the devastation invasive species cause to native nesting species, and provide expert guidance on how residents can help alleviate this threat.

8.1.0.23 Work with the NJ Division of Fish and Wildlife's Bureau of Marine Fisheries, local recreational and commercial fisheries associations, and fishers to develop a process that encourages fishermen to report the number and location of lost pots to the appropriate state agency/agencies at the end of the harvest season.

8.1.0.24 Engage government agencies, conservation partners and other stakeholders in constructive dialogue regarding the importance of providing and methods to provide technical support for carrying out restoration and management practices aimed at increasing structural habitat diversity.

8.1.0.25 Provide technical support to public landowners and land managers for carrying out restoration and management practices aimed at increasing structural habitat diversity.

8.1.0.26 Coordinate across federal, state and local agencies and approved consulting foresters that provide financial, logistical or planning assistance to woodland landowners to adopt or endorse consistent best management practices concerning controlled burns to maintain and/or improve forested habitat for wildlife.

8.1.0.27 NJ Division of Fish and Wildlife and their Game Council, and appropriate conservation partners and other stakeholders to review the freshwater fish code relative to SGCN or sensitive game species' populations and fecundity, and support amendments to the harvest quota or "bag limits" as needed.

8.1.0.28 Engage government agencies, conservation partners and other stakeholders to collaboratively develop and implement an extensive educational/outreach program targeting sportsmen's organizations, as well as public constituents, addressing the unintended hazard of lead-shot on wildlife, in particular scavengers.

8.1.0.29 Government agencies and conservation partners to advise members of the relevant scientific community of the need for specific studies, reports or investigations targeting the data-deficiency regarding the interactions between migratory shore birds, horseshoe crabs, and oyster-growers, and the potential impacts on shore birds and horseshoe crabs.

8.1.0.30 Government agencies and conservation partners to advise members of the relevant scientific community of the need for specific studies, reports or investigations targeting the data-deficiency regarding SGCN and/or their habitats.

8.1.0.31 Government agencies, conservation partners and other stakeholders to work together to create GIS mapping for marine wildlife and habitat to assist in reducing impacts of energy production activities. Ensure this information is available to appropriate personnel for planning or response measures.

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8.1.0.32 Work with NJ DEP's Water Management, other state agencies and watershed organizations to determine if mitigation is warranted at applicable power plants.

8.1.0.33 Engage government agencies, conservation partners and other land managers, communities, landowners, and commercial and industrial stakeholders in discussions regarding the importance of protecting and methods to protect priority wetlands beyond the levels afforded through regulation by maintaining and/or restoring optimal biological buffers around wetlands.

8.1.0.34 Work with the NJ Education Association and Department of Education to design curriculum and outdoor experimental learning opportunities, and provide training to teachers on implementation of these activities.

8.1.0.35 Promote backyard habitat management to create and/or enhance food availability for migratory species (birds, bats, invertebrates) on private lands.

8.1.0.36 Reduce "by-catch" of SGCN and other non-target species by enlisting voluntary cooperation to use exclusion devises, appropriate trap sizes, etc. through education and outreach.

8.1.0.37 Enlist landowners and NJ citizens in the protection of and survey efforts for SGCN, in particular rare species, by increasing enrollment in landowner incentives, forest stewardship, backyard habitat management and wildlife-related volunteer programs.

8.1.0.38 Engage partners, stakeholders and land managers in constructive dialogue promoting forest stewardship for SGCN that use core forests and forested corridors.

8.1.0.39 Deploy stewards at active nesting areas to work with and educate the public on how to reduce disturbance to birds.

8.1.0.40 Encourage researchers, land managers, naturalists and enthusiasts to follow proper procedures for the coordination and/or permitting of research/management activities involving wildlife and sensitive habitats, and discourage activities that alter vegetation or wetlands, or cause harm or disturbance to wildlife.

8.1.0.41 Engage beach-owning entities (e.g., government, non-government and non-profit organizations, and landowners) in a constructive dialogue to develop guidelines for management of beach/dune communities and to ensure that each group is educated and aware of the needs of the other groups.

8.1.0.42 Engage citizens, wildlife observers and photographers through discussions and distributable information regarding the importance of and encouraging implementing responsible and ethical behavior when observing wildlife by developing an alliance of wildlife photographers and widely circulating recommendations on how to reduce impact.

8.1.0.43 Engage Nuisance Wildlife Control Operators (NWCOs), conservation partners, and the public in conserving bat populations by advising proper exclusion methods from buildings, offering bat houses where roosting habitat is needed, and improving the public's understanding and acceptance of bats.

8.1.0.44 Engage conservation partners, stakeholders, government agencies and other land stewards in constructive dialogues encouraging their inclusion of controlled burns in forest and other stewardship plans.

8.1.0.45 Form cooperative partnerships with airports and airline companies to facilitate habitat creation away from airports and outside of flight patterns, and to identify seasonal wildlife strike risks to determine if seasonal shifts in flight patterns will minimize this risk.

8.1.0.46 Form cooperative partnerships with dredging companies to facilitate habitat creation and enhancement within project areas, and to identify seasonal timing of activities that would minimize impacts to wildlife and their habitats.

8.1.0.47 Form cooperative partnerships with energy companies to facilitate habitat creation and enhancement away from and outside of project areas, the restoration of appropriate habitats within project areas (e.g., rights-of-way could benefit butterflies and some bird species), and to identify seasonal timing of activities that would minimize impacts to wildlife.

8.1.0.48 Form cooperative partnerships with transportation and shipment agencies and companies to facilitate habitat creation and enhancement away from and outside of project areas and to identify seasonal timing of activities that would minimize impacts to wildlife.

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8.1.0.49 Reduce the impacts of entrainment, impingement and thermal discharge at power plants by working with conservation partners, academia, etc. to ensure that best available technologies are utilized wherever possible.

8.1.0.50 Engage Nuisance Wildlife Control Operators (NWCOs), conservation partners, and the public in conserving snake populations by advising proper removal from buildings, exclusion methods from buildings, and improving the public's understanding and acceptance of snakes.

8.2 Recruitment and retention activities: *Participation in programs intended to recruit and retain anglers, boater, hunters or wildlife watchers.*

8.2.3 For wildlife watching: *Participation in programs intended to recruit and retain wildlife watchers Note: this activity has limited eligibility for funding through WSFR grant programs.*

8.2.3.1 Develop and implement nature-focused tourism opportunities including wildlife viewing sites, interpretive signage highlighting unique ecosystems/habitats, and wildlife-related recreational opportunities that do not negatively impact SGCN or their habitats.

8.3 WSFR program/subprogram outreach: *Provision of educational information on WSFR grants and grant programs to a variety of audiences through a variety of means (e.g., participating in trade shows to share information WSFR funded work; building kiosks to display WSFR program information at supported areas and facilities).*

8.3.0 WSFR program/subprogram outreach strategies

8.3.0.1 Utilize WSFR grant funds, in combination with alternate funding sources as needed, to implement a scientific data-driven, extensive educational/outreach program targeting sportsmen's organizations and fisheries, as well as public constituents, addressing the potential impacts of over-harvesting wildlife can have on the ecological system and to promote "sustainable harvest".

8.3.0.2 Utilize WSFR grant funds, in combination with alternate funding sources as needed, to implement an extensive educational/outreach program consisting of displays, fliers, list-serve mailings, Facebook posts and speaking engagements with sportsmen's organizations and fisheries, as well as public constituents, addressing the unintended effects fishing gear and tackle can have on non-target species.

8.3.0.3 Utilize WSFR grant funds, in combination with alternate funding sources as needed, to implement catch and release outreach program(s).

8.3.0.4 Utilize WSFR grant funds, in combination with alternate funding sources as needed, to implement an extensive educational/outreach program consisting of displays, fliers, list-serve mailings, Facebook posts and speaking engagements with sportsmen's organizations and fisheries addressing the unintended effects abandoned fishing gear, tackle and crab pots can have on wildlife.

8.3.0.5 Develop and provide (or otherwise make publicly available) educational programs and/or materials that provide homeowners information on how to design dwellings and other structures in a manner that is wildlife friendly (e.g., using bird-safe glass on windows).

8.3.0.6 Develop and provide (or otherwise make publicly available) educational programs and/or materials to enlist landowners, land managers and local communities to discourage the presence of managed cat colonies and trap, neuter and release programs in wildlife habitats.

8.3.0.7 Develop and provide (or otherwise make publicly available) educational programs and/or materials that describe the negative impacts of off-road vehicles and watercraft use in and adjacent to critical SGCN habitats, and the importance of confining such activities to more appropriate locations and/or seasons.

8.3.0.8 Develop and provide (or otherwise make publicly available) educational programs and/or materials to educate recreationists and encourage landowners to eliminate garbage in the vicinity of suitable wildlife habitat, in particular SGCN habitat. Information should include the detrimental impacts garbage may have on various wildlife species.

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8.3.0.9 Develop and provide (or otherwise make publicly available) educational programs and/or materials to enlist landowners and land managers to include only native plants in landscaping and restoration projects. Provide information to assist them in detecting problematic establishment of invasive, non-indigenous plants.

8.3.0.10 Develop and provide (or otherwise make publicly available) educational programs and/or materials to educate landowners and NJ citizens on threats to fish and wildlife (including marine animals).

8.3.0.11 Develop and provide (or otherwise make publicly available) educational programs and/or materials to the public, wildlife-related professionals, foresters, etc., that describe the value of species that are often feared (e.g., snakes, bats, spiders, Allegheny woodrat) and/or deemed a "nuisance" (e.g., squirrel, deer, snapping turtle), and therefore, persecuted by people. Include information on tolerance, proper identification, eviction from human dwellings, how to minimize the animal's presence on the property, and/or how to live in harmony with the animal.

8.3.0.12 Promote awareness of WSFR (Wildlife and Sportfish Restoration) Outreach/Awareness grants, an important funding source for conservation among hunters and anglers as well as the general public.

8.3.0.13 Conduct an educational campaign to encourage observer ethics and respect for wildlife and natural habitat.

8.3.0.14 Develop an educational outreach program using a variety of media to ensure maximizing the distribution of information, in particular targeting sportsmen's organizations and fisheries, regarding the unintended effects abandoned fishing gear, tackle and crab pots can have on wildlife, including non-target species.

8.3.0.15 Develop an educational outreach program for citizens regarding: 1) The impacts to wildlife as a result of plastic bags entering aquatic and marine systems, 2) The importance of decreasing the amount of plastic shopping bags in circulation, 3) The need for businesses to voluntarily charge for bags or reimburse people for using their own non-plastic bags, and 4) The need for their assistance through public pressure on legislators and government to pass legislation that that limits the amount of plastic shopping bags in circulation.

8.3.0.16 Develop an educational outreach program using a variety of media to ensure maximizing the distribution of information, in particular targeting sportsmen's organizations and fisheries, promoting "catch and release" and the impacts excessive harvests can have on wildlife populations.

8.3.0.17 Develop an educational outreach program using a variety of media to ensure maximizing the distribution of information, in particular targeting sportsmen's organizations and fisheries, promoting "sustainable harvest" using scientific data, and garner support from constituents through this outreach.

8.3.0.18 Develop an Eelgrass/Widgeon Grass education and mapping program to educate coastal boating and recreation communities about the value, fragility and location of submerged aquatic vegetation beds and habitats.

8.3.0.19 Develop an educational outreach program for the public on the devastating effects predators can have on native nesting wildlife.

8.3.0.20 Develop an educational outreach program for landowners, particularly those in the coastal and bay areas, boaters, and the general public with information about the negative impacts on marine wildlife and habitats, and steps they can implement to reduce these impacts.

8.3.0.21 Develop an educational outreach program for the general public, in particular those within and adjacent to coastal and riparian areas on the realities of sea-level rise to help citizens living in these areas understand how this will affect them, how coastal stabilization negatively impacts wildlife by preventing natural processes, and how their decisions impact species.

8.3.0.22 Post signage in sensitive coastal habitats (e.g., bird and Diamondback Terrapin nesting areas) to educate the boating community on responsible use of these areas.

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8.3.0.23 Develop an educational outreach program for coastal municipalities and residents to promote an understanding of the benefits of soft structures over hard structures for shoreline stabilization.

8.3.0.24 Develop educational outreach programs for local decision-makers, land developers, landowners and citizens about lawn alternatives and the importance of natural vegetation and "edge" habitats on developed properties.

8.3.0.25 Develop educational outreach programs for landowners, nurseries and the general public regarding the negative impacts of invasive and non-native plants on our natural communities.

8.3.0.26 Develop educational outreach programs for private and public landowners and land managers regarding the importance of and how to manage core forests and forested corridors in a way that will be beneficial for SGCN, particularly endangered, threatened and special concern species.

8.3.0.27 Develop educational outreach programs for public and private landowners and land managers regarding the importance of structural habitat diversity, methods to increase diversity, and/or incentive programs available to increase habitat diversity.

8.3.0.28 Develop educational outreach programs for public and private landowners and land managers regarding the importance of managing grasslands for grassland-dependent species, methods of management, and/or incentive programs available.

8.3.0.29 Develop educational outreach programs for local decision-makers, land developers, landowners and citizens about the importance of maintaining a vegetative buffer along riparian and aquatic habitats to intercept storm water runoff and minimize soil erosion.

8.3.0.30 Develop educational outreach programs for private and public landowners, as well as schools, regarding the benefits and creation of backyard habitats for wildlife.

8.3.0.31 Develop an educational outreach program for landowners and citizens on the secondary impacts of rodenticides on predators and scavengers.

8.3.0.32 Develop an educational outreach program for landowners and citizens on the threats that herbicides and pesticides pose to aquatic systems and wildlife, and to promote safer usage of such products.

9 Planning

9.1 Land use planning: *Leading or participating in land use planning for rural, urban or agricultural lands (e.g., assist in developing county-wide zoning plans, participate in workgroup regarding low impact development siting).*

9.1.0 Land use planning strategies

9.1.0.1 Develop smart-growth plans and critical habitat designations that consider SGCN life history requirements and habitat needs, connectivity and health of those habitats, and minimizes human-associated disturbances to those habitats and SGCN inhabiting them.

9.1.0.2 Develop town plans that avoid impacts to SGCN species and their habitats.

9.1.0.3 Develop a plan that directs the creation of impervious surfaces away from and to minimize impacts on aquatic systems and critical terrestrial habitats. The plan should also include strategies to increase the resiliency of aquatic and critical terrestrial habitats to threats and stressors that would impact the reproduction and survival of wildlife.

9.1.0.4 Develop a plan that directs the creation of new impoundments and/or the expansion of bogs for cranberry farming within or immediately adjacent to critical forested habitats in a manner that minimizes impacts on the natural hydrology of the watershed and subsequently, the natural wetlands in the area.

9.1.0.5 Develop a plan that directs the creation or expansion of energy or utility rights-of-way in a manner that minimizes the impacts on critical forested habitats and the wildlife community.

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			9.1.0.6 Develop a plan that directs the creation or expansion of roads and railroads or the re-establishment of abandoned railroads within and adjacent to critical forested habitats in a manner that minimizes the impacts on critical forested habitats and the wildlife community.
			9.1.0.7 Develop a plan that directs the maintenance of or new channelization of forested streams and rivers in a manner that minimizes impacts of the aquatic ecological system and adjacent forest.
			9.1.0.8 Develop a plan that focuses on strategies for oil pipelines to avoid sensitive habitats that would be highly impacted by oil spills.
			9.1.0.9 Develop a plan that focuses on strategies to minimize the creation of renewable energy farms (e.g., solar, wind) and related infrastructures within and their impacts on forested habitats and the wildlife community.
			9.1.0.10 Develop a plan that focuses on strategies to minimize the impacts of mining on critical forested habitats.
			9.1.0.11 Develop a plan that focuses on strategies to minimize the impacts of power plants on critical forested habitats and the wildlife community.
			9.1.0.12 Develop a plan to avoid freshwater tidal management.
			9.1.0.13 Develop a plan to minimize agriculture that would result in groundwater withdrawal in critical forested areas.
			9.1.0.14 Develop a plan to minimize development that would result in groundwater withdrawal in critical forested areas.
			9.1.0.15 Develop a plan to minimize fragmentation of terrestrial and aquatic habitats by roads.
			9.1.0.16 Develop a plan to minimize new lawnscapes and preserve natural vegetation within and adjacent to critical forest areas.
			9.1.0.17 Develop a plan to minimize nutrient and effluent loads from aquaculture practices.
			9.1.0.18 Develop a plan to minimize the effects of road widening and traffic volume increases within critical wildlife habitat areas using CHANJ products.
			9.1.0.19 Develop a plan to minimize the extent of impervious surfaces as part of new construction to increase water recharge in those areas.
			9.1.0.20 Develop a plan to minimize the impacts of existing agricultural properties adjacent to and the conversion of forest habitats (terrestrial and aquatic, within or adjacent to critical forests) to agriculture, grazing areas/livestock farms, and plantations.
			9.1.0.21 Develop a plan to minimize the use of any-sized dam in critical forested areas.
			9.1.0.22 Incorporate habitat connectivity and preservation of natural areas into state and local land-use policy and the environmental review process to minimize the impacts of transportation and service corridors on fish and wildlife and their habitats.
			9.1.0.23 Develop a plan to mitigate the effects of transportation barriers by using CHANJ products.
			9.1.0.24 Develop a plan to prevent livestock from entering water bodies in critical forested habitats.
			9.1.0.25 Develop a plan to prevent the conversion of forested stream buffers to pastures in critical forested habitats.
			9.1.0.26 Develop a plan to minimize any adverse impacts of aquaculture farming techniques and structures on freshwater and intertidal habitats.
			9.1.0.27 Develop a plan to use wildlife-appropriate culverts in critical forested areas.

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9.1.0.28 Develop and coordinate state, regional and local plans for suitable lot layout and landscaping to minimize human-wildlife conflicts that also incorporates habitat connectivity and preservation of natural areas.

9.1.0.29 Provide GIS or related data, maps, resource inventories, as well as related training, pertaining to the SWAP and it's recommended conservation actions for use or consideration by State, County or municipal planning agencies.

9.1.0.30 Incorporate habitat connectivity and preservation of natural areas into state and local land-use policy and the environmental review process to minimize habitat fragmentation and other related threats associated with development.

9.1.0.31 Develop wetland restoration plans that consider the life history and needs of wildlife occupying targeted habitats.

9.1.0.32 Incorporate aquatic habitat connectivity and water quality/effluent standards into local and state aquaculture plans and BMPs.

9.1.0.33 Review the species, threats, action successes, and habitats, and work with partners to revise the 2017 State Wildlife Action Plan for the 2025 resubmittal.

9.2 Organizational strategic and CMS planning: *Development of agency strategic and operational plans and fish and wildlife comprehensive management systems Note: Does not include actions to implement plans.*

9.2.1 Organizational strategic and operational planning: *Development of agency strategic and operational plans Note: Does not include actions to implement plans.*

9.2.1.1 Identify and codify legal ORV access areas on state lands.

9.3 Species and habitat management planning: *Development of management plans for fish and wildlife species and habitats.*

9.3.1 Species management planning: *Development of management plans for fish and wildlife species (e.g., interjurisdictional fisheries management planning).*

9.3.1.1 Develop a management plan specific to River Herring/Alewife to ensure a sustainable population in perpetuity.

9.3.1.2 Develop a management plan to improve the availability of prey/food resources for SGCN whose populations are thought to be limited due wholly or in part to a lack of (or contaminated) food resources.

9.3.1.3 Develop a management plan to restrict human activity (e.g., recreational, maintenance work, etc.) from sensitive habitats/areas such as avian nesting sites, reptile and amphibian breeding areas (nesting or gestation/birthing and breeding pools, respectively), and bat hibernacula, and federal buffers for marine mammals.

9.3.1.4 Develop town plans that avoid impacts to SGCN species and their habitats.

9.3.1.5 Develop response plans to address disease outbreaks within wildlife populations, in particular SGCN.

9.3.1.6 Amend NJ's current oil spill response plan to 1) expand the geographic area addressed, 2) expand the targeted species impacted and in need of recovery, and 3) revise current and integrate new actions into the plan as needed.

9.3.1.7 Develop a rapid response plan for various scenarios (e.g., insect infestations destroying native habitat, wildlife disease) to be implemented upon exotic pathogen introduction or incident.

9.3.1.8 [*Reserved**]

9.3.1.9 Develop a management plan incorporating the effects of pesticides, herbicides and other biological controls on SGCN and their critical and supporting habitats.

* "Reserved" indicates placeholders for future edits or additions.

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9.3.1.10 Develop a management plan to combat the impacts of diseases/pathogens impacting SGCN and/or their habitats.

9.3.1.11 Develop a management plan using predator-control techniques aimed at improving SGCN populations and methods to minimize the impact of those species carrying parasites or diseases that may impact SGCN (e.g., raccoon roundworm kills Allegheny woodrat).

9.3.1.12 Develop a management plan to benefit urban-associated SGCN based on research.

9.3.1.13 Develop a management plan to ensure SGCN populations' persistence based on long-term monitoring of resident and migratory SGCN populations and their habitats.

9.3.1.14 Create species management plans that will promote the protection and where appropriate, the development of old-growth forest stands with large trees, in particular those within large, contiguous forest tracts.

9.3.1.15 Develop a plan to minimize the impacts of oil spills on wildlife and their habitats.

9.3.1.16 DOD and appropriate state agencies work together to improve DOD Integrated Natural Resource Management Plans (INRMP) to develop strategies to minimize or eliminate disturbances to all SGCN (i.e., beyond their federal requirements) during military activities and to improve SGCN habitat and presence.

9.3.1.17 Evaluate the potential benefits to high marsh species (such as Black Rail and Northern Harrier) by restoring salt hay farms along Delaware Bay.

9.3.1.18 Using baseline and monitoring data, develop a plan and seek funding for the removal of horseshoe crab impingement hazards.

9.3.1.19 Develop management strategies for freshwater SGCN fish and incorporate them into existing Freshwater Fisheries Management Plans.

9.3.1.20 Use compiled life history information on urban-associated SGCN regarding threats, breeding, fecundity, survival, habitat needs, wintering sites/roosts, migration routes and destinations, etc. to develop wildlife management strategies to benefit such species.

9.3.1.21 Develop and implement conservation actions for issues, threats, and opportunities most effectively addressed at a regional-, multi-state-, and landscape-scales, with the input and involvement of multiple parties involved in the creation and implementation of the State Wildlife Action Plans.

9.3.2 Listed species recovery planning: *Development of recovery plans for federal or state listed species.*

9.3.2.1 Develop proactive species recovery plans for all endangered and threatened species including guidance and objectives pertaining to critical and supporting habitat to meet and maintain recovery goals.

9.3.3 Habitat management planning: *Development of management plans for habitats and natural processes (e.g., management planning for longleaf pine habitat; Habitat Conservation Plan development).*

9.3.3.1 Develop a management plan to improve the availability of prey/food resources for SGCN whose populations are thought to be limited due wholly or in part to a lack of (or contaminated) food resources.

9.3.3.2 Develop a management plan for using mined sand or dredged material to improve habitat for wildlife, particularly for spawning horseshoe crabs and migrating shorebirds.

9.3.3.3 Integrate best management practices (BMPs) regarding dune and beach management into beach nesting bird management agreements with government agencies (and private landowners where necessary).

9.3.3.4 Create habitat restoration plans to repair marshes and associated beaches damaged by salt hay farm/dike abandonment for all bay shore areas currently degraded.

9.3.3.5 Develop a management plan using forest management/silviculture strategies that enhance and maintain critical core forests as appropriate for targeted species (e.g., for many SGCN forest birds, "core" forest would include the forest area >90 meters from the forest edge), in perpetuity, to benefit interior forest and disturbance-sensitive SGCN through research and monitoring.

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			9.3.3.6 Develop a management plan for maintaining and enhancing healthy, SGCN-associated terrestrial and aquatic habitats and associated riparian habitats, and to minimize (if not avoid) incidental take of resident and migratory fish and wildlife and/or disturbance to them (in particular during breeding periods) on public and private lands for maintaining populations in perpetuity.
			9.3.3.7 Develop a management plan to reduce the impacts of herbivory on native vegetation and the degradation of habitats supporting SGCN by invasive and/or native, over-abundant wildlife species including but not limited to mute swans, Canada geese, beaver and white-tailed deer.
			9.3.3.8 Develop a management plan to combat the impacts of diseases/pathogens impacting SGCN and/or their habitats.
			9.3.3.9 Develop a response plan to outbreaks using BMPs to control infestations and limit their spread in a way that avoids excessive harm to non-target species.
			9.3.3.10 Develop a management plan to ensure SGCN populations' persistence based on long-term monitoring of resident and migratory SGCN populations and their habitats.
			9.3.3.11 Develop town plans that avoid impacts to SGCN species and their habitats.
			9.3.3.12 Develop a management plan using engineering standards that embrace both shore protection/resiliency and habitat creation for shorebirds, horseshoe crabs and other coastal species along the Atlantic and Delaware Bay coasts.
			9.3.3.13 Develop a management plan that will establish/improve habitat resilience (e.g., shorelines of the coast and Delaware Bay, forested habitats of the Pinelands and Skylands) that benefits wildlife inhabiting these areas and prevents or ameliorates near-term impacts of climate change throughout the State, but in particular within the coastal and Delaware Bay areas.
			9.3.3.14 Develop a management plan using aquaculture practices in the Delaware Bay that are compatible with the recovery of SGCN.
			9.3.3.15 Develop a management plan incorporating the effects of pesticides, herbicides and other biological controls on SGCN and their critical and supporting habitats.
			9.3.3.16 Develop a management plan to restrict human activity (e.g., recreational, maintenance work, etc.) from sensitive habitats/areas such as avian nesting sites, reptile and amphibian breeding areas (nesting or gestation/birthing and breeding pools, respectively), and bat hibernacula, and federal buffers for marine mammals.
			9.3.3.17 Develop a management plan for prescribed burning that will benefit Pinelands dependent species and increase or maintain habitat quality for these species in the Pinelands.
			9.3.3.18 In cooperation with species and habitat experts, develop management plans for significant natural and/or unique communities, in particular those supporting SGCN, and provide the information to the landowners/managers (federal, state and local government agencies or non-government organization) for review and implementation.
			9.3.3.19 Develop management plans for SGCN inhabiting permanently protected natural lands using available baseline and population trend data.
			9.3.3.20 Develop an action plan for immediate implementation should habitat levels fall below the minimum necessary size and/or structure within the Cape May Peninsula to sustain the avian migration.
			9.3.3.21 Develop a rapid response plan for various scenarios (e.g., insect infestations destroying native habitat, wildlife disease) to be implemented upon exotic pathogen introduction or incident.

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9.3.3.22 Create management plans to minimize and/or prevent wildlife road mortality that will incorporate wildlife passages in conjunction with barrier fencing and, where possible, seasonal closures. Aquatic-associated passages must avoid disturbance to the natural streambeds and riparian habitat, permit high volumes of water to flow freely, and provide adequate travel corridors for terrestrial wildlife, while maintaining stream flow for fish passage. Bridges that span rivers and streambeds and include floodplain habitat on either side of the span to provide travel corridors for terrestrial wildlife are preferred over culverts.

9.3.3.23 Create forest management plans that will promote the protection and/or development of old-growth forest stands with large trees, in particular those within large, contiguous forest tracts.

9.3.3.24 Develop a plan to improve the enforcement of policies and/or regulations that protect wetlands, riparian and floodplain areas, and aquatic habitats (including open waters).

9.3.3.25 Develop a habitat management plan focused on areas important to near-shore, coastal species (e.g., herring, sturgeon, terrapin, nesting birds) that prioritizes these areas to direct resources to minimize the impacts of sea-level rise, flooding and storms (including extreme rain events) such as increased erosion of beach, mudflat and marsh habitats, and the increased risk of saltwater intrusion into freshwater habitats. Gather "best information" for spatial modeling of anticipated habitat shifts from sea-level rise, flooding, etc.

9.3.3.26 Develop a management plan for parcels of suitable size to be managed for native herbaceous plant species that support breeding grassland dependent species.

9.3.3.27 Develop a management plan to expand breeding habitat and connectivity for tiger salamanders and other obligate vernal pool breeders.

9.3.3.28 Develop a plan to minimize the impacts of oil spills on wildlife and their habitats.

9.3.3.29 Develop habitat management plans aimed at reducing or eliminating negative impacts of ORVs.

9.3.3.30 Using baseline and monitoring data, develop a plan and seek funding for the removal of horseshoe crab impingement hazards.

9.3.3.31 Using data from baseline inventory and monitoring of all current marsh islands and their vulnerability to inundation as a result of sea level rise, create a plan to delineate each island's ideal fit for habitat management (e.g., restoration, hasting, dredging). Planning will factor in criteria to designate which islands should be maintained or restored, and which will be passively allowed to submerge.

9.3.3.32 DOD and appropriate state agencies work together to improve DOD Integrated Natural Resource Management Plans (INRMP) to develop strategies to minimize or eliminate disturbances to all SGCN (i.e., beyond their federal requirements) during military activities and to improve SGCN habitat and presence.

9.3.3.33 Evaluate the potential benefits to increasing high marsh habitat by restoring salt hay farms along Delaware Bay.

9.3.3.34 Include controlled burn prescriptions in forest and stewardship plans to improve wildlife habitat.

9.3.3.35 Incorporate habitat connectivity, preservation of natural areas, and the implementation of BMPs into state and local land-use policy environmental review process and energy development plans to minimize habitat fragmentation and related threats associated with solar farms and altered habitats.

9.3.3.36 Integrate plans for properly located and timed habitat restoration and management along transportation, energy and service corridors to minimize risks to and benefit wildlife.

9.3.3.37 Develop management strategies for freshwater SGCN fish and incorporate them into existing Freshwater Fisheries Management Plans.

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9.3.3.38 Use compiled life history information on urban-associated SGCN regarding threats, breeding, fecundity, survival, habitat needs, wintering sites/roosts, migration routes and destinations, etc. to develop habitat management strategies to benefit such species.

11 Technical Assistance

11.1 Environmental review: *Review of agency and private sector policies, projects and plans (primarily related to development and adverse impacts to natural resources) to help ensure potential impacts to fish and wildlife are avoided, minimized and/or compensated/mitigated (e.g., review of municipal pier development, review of transmission corridor siting).*

11.1.1 Review of proposed projects: *Review of proposed development projects to help ensure that impacts to fish and wildlife are minimized and resource benefits are maximized.*

11.1.1.1 Use Biotics database and Landscape Project Mapping in regulatory reviews to ensure protection by applicable laws and regulations.

11.1.1.2 Develop smart-growth plans and critical habitat designations that consider SGCN life history requirements and habitat needs, connectivity and health of those habitats, and minimize human-associated disturbances to those habitats and the SGCN inhabiting them.

11.1.1.3 Government organizations to thoroughly review wetland restoration plans, applying the most current science for wildlife, habitats and aquatic systems, to assess the impacts to resident and migratory wildlife occupying the targeted habitats.

11.1.1.4 Incorporate habitat connectivity and preservation of natural areas into state and local land-use policy and the environmental review process to minimize habitat fragmentation and related threats associated with development.

11.1.1.5 Incorporate habitat connectivity and preservation of natural areas into state and local land-use policy and the environmental review process to minimize the impacts of transportation and service corridors on fish and wildlife and their habitats.

11.1.1.6 Review all projects to be conducted in or adjacent to coastal wetlands and marshes, and provide recommendations on how to best avoid or reduce human disturbance at nesting areas (for example, timing restrictions) and actions not permitted.

11.1.1.7 Review proposed construction or other work projects and permit applications, provide recommendations on how to best avoid disturbing sensitive species, and identify actions not permitted.

11.1.1.8 Review proposed research projects and permit applications, provide recommendations on how to best avoid disturbing sensitive species, and identify actions not permitted.

11.1.1.9 Review strategies for creating or enhancing connectivity (e.g., installing appropriately-sized wildlife passages) between wetlands to allow wildlife to disperse naturally and safely.

11.1.1.10 Use CHANJ mapping in reviews of proposed energy, mining, transportation and utility service companies/agencies' projects to attempt to maintain habitat connectivity and reduce fragmentation, and identify potential impacts of the projects.

11.1.1.11 Use the best available science (species data, habitat present, site layout options, etc.) when conducting regulatory reviews of proposed offshore energy projects relating to drilling, extraction and distribution of petroleum and gas products to reduce habitat destruction and minimize impacts on wildlife.

11.1.1.12 Use the best available science (species data, habitat present, site layout options, etc.) when conducting regulatory reviews of proposed solar farm projects to reduce habitat fragmentation and minimize impacts on wildlife.

11.1.1.13 Use the best available science (species data, habitat present, wind farm layout options, wind blade impacts on migratory species, location of migration routes, etc.) when conducting regulatory reviews of proposed wind farm projects to minimize impacts on migratory and resident wildlife and reduce habitat fragmentation.

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11.1.2 Review of proposed policies and plans: *Review of non-conservation oriented policies and plans to help ensure that impacts to fish and wildlife are minimized and resource benefits are maximized (e.g., review of harbor dredging plan, review of state highway plans).*

11.1.2.1 Develop smart-growth plans and critical habitat designations that consider SGCN life history requirements and habitat needs, connectivity and health of those habitats, and minimize human-associated disturbances to those habitats and the SGCN inhabiting them.

11.1.2.2 Government organizations to thoroughly review wetland restoration plans, applying the most current science for wildlife, habitats and aquatic systems, to assess the impacts to resident and migratory wildlife occupying the targeted habitats.

11.1.2.3 Incorporate aquatic habitat connectivity and water quality/effluent standards into the environmental review process to help establish policies and plans that minimize the impact of aquaculture on fish and wildlife.

11.1.2.4 Review strategies for creating or enhancing connectivity (e.g., installing appropriately-sized wildlife passages) between wetlands to allow wildlife to disperse naturally and safely.

11.2 Technical assistance: *Provision of professional training and technical assistance to others on fish and wildlife assessment and management.*

11.2.0 Assorted technical assistance strategies

11.2.0.1 Provide technical support to private and public landowners and land managers for carrying out restoration and management practices aimed at increasing structural habitat diversity.

11.2.0.2 Provide technical support to public and private landowners and land managers for controlling invasive, native and non-native plant species in order to increase structural habitat diversity.

11.2.0.3 Develop state, regional and local BMPs that focus on minimizing habitat fragmentation and human-wildlife conflicts associated with development. Make information available to land developers and private and public landowners for implementation.

11.2.0.4 Provide educational resources, training programs, and expert guidance to private and public landowners and land managers on the secondary impacts of rodenticides on predators and scavengers.

11.2.0.5 Provide educational resources, training programs, and expert guidance to private and public landowners and land managers on the threats that herbicides and pesticides pose to aquatic systems and wildlife, and to promote safer usage of such products.

11.2.0.6 Provide educational resources, training programs, and on-the-ground guidance to energy, mining, transportation, and utility service agencies/companies and their project and resource managers on habitat creation, enhancement and restoration within and adjacent to project areas, as well as away from and outside of project areas (depending on the target species), by managing vegetation for a variety of species and that also considers appropriate timing for such activities to avoid sensitive periods (e.g., nesting, denning, roosting) and minimize harm to wildlife. Wind farms should address both terrestrial bound and low-flying species. Examples of habitat management include, but are not limited to, integrating short and tall grasses, specific host plants, brush piles, water sources/wetlands, shrubby areas, nesting areas and no-mow set-asides.

11.2.0.7 Provide educational resources, training programs, and on-the-ground guidance to energy, mining, transportation, and utility service agencies/companies and their project and resource managers on the importance of maintaining habitat connectivity, minimizing fragmentation, and the use of CHANJ products to help them target areas for such planning.

11.2.0.8 Provide educational resources, training programs, and on-the-ground guidance to public and private landowners and land managers on habitat creation and enhancement strategies that also considers appropriate timing for such activities to avoid sensitive periods (e.g., nesting, denning, roosting) and minimize harm to wildlife.

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			11.2.0.9 Provide educational resources, training programs, and on-the-ground guidance to municipalities, land developers, and other land managers and private landowners about the importance of leaving vegetation in place, especially along riparian areas and wildlife movement corridors.
			11.2.0.10 Provide technical support to private landowners, consultants, and land managers to create customized management plans based on location and SGCN.
			11.2.0.11 Provide educational resources, training programs, and on-the-ground guidance to private and public landowners and land managers on the benefits of and for creating young forest and early succession habitat for SGCN.
			11.2.0.12 Provide educational resources and technical support to public landowners and land managers for managing grasslands for grassland-dependent species.
			11.2.0.13 Provide educational resources and technical support to public landowners, private landowners with sufficient acreage, and land managers to promote the protection and/or development of old-growth forest stands with large trees, in particular those within large, contiguous forest tracts.
			11.2.0.14 Provide educational resources and technical support to public and private landowners and land managers to promote the protection of wetlands, riparian and floodplain areas, and aquatic habitats (including open waters), and to enhance or restore biologically appropriate buffers.
			11.2.0.15 Provide educational resources, training programs, and on-the-ground guidance to municipalities, land developers, and other land managers and landowners about the importance of retaining and in an effort to protect, create, enhance and/or restore vegetation along aquatic habitats.
			11.2.0.16 Provide educational resources and technical support to public and private landowners and land managers to promote the protection of critical SGCN forested habitat and minimize forest edge to benefit interior forest and disturbance-sensitive SGCN.
			11.2.0.17 Provide educational resources and technical support to public and private landowners and land managers to promote the protection of vernal pools and the protection, enhancement and/or restoration of biologically appropriate buffers.
			11.2.0.18 Provide educational resources and technical support to public and private landowners and land managers to promote the protection of lands adjacent to fish SGCN habitats and/or aquatic systems feeding into such habitats.
			11.2.0.19 Provide educational resources and technical support to public and private landowners and land managers to promote the protection and/or enhancement of scrub-shrub habitats for SGCN.
			11.2.0.20 Provide educational resources and technical support to public and private landowners and land managers to promote the protection and/or enhancement of critical coastal habitats (beach/dune, scrub-shrub, forest, wetland, marsh, and marine and estuarine habitats) that provide nesting, migrating and wintering areas for SGCN birds, fish and other coastal SGCN.
			11.2.0.21 Provide educational resources and technical support to public and private landowners and land managers of lands adjacent to critical migratory stopover habitats for songbirds, raptors, shorebirds, bats and invertebrates to promote the protection and/or enhancement of those adjacent habitats to increase the effective size of the migratory habitat.
			11.2.0.22 Provide educational resources, training programs, and expert guidance to public and private landowners and land managers about lawn alternatives and the importance of natural vegetation and "edge" habitats on developed properties.
			11.2.0.23 Provide educational resources and technical support to public and private landowners and land managers of lands adjacent to SGCN habitats to promote the protection and/or enhancement of those adjacent habitats to increase the overall size of the "core" area and/or provide a natural buffer, enhancing the suitability of the core area for SGCN, and that connect conserved SGCN habitats.

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11.2.0.24 Provide educational resources, training programs, and expert guidance to public and private landowners and land managers on how to manage vegetated roadside areas (e.g., mowing, brush-hogging, etc.) on a schedule that avoids peak activity periods for wildlife and therefore, minimizes harm.

11.2.0.25 Provide educational resources, training programs, and on-the-ground guidance to resource managers regarding the assessment of and addressing secondary impacts (i.e. ancillary prescribed burns, trespassers, ORV use, mosquitoes, deer, buffers) related to residential and commercial development.

11.2.0.26 Make educational resources available to the public that encourage researchers to seek out guidance prior to finalizing proposals and submitting State permit applications to reduce potential impacts on sensitive species.

11.2.0.27 Provide educational resources and presentations to coastal municipalities and residents to promote the understanding of the benefits of soft structures over hard structures for shoreline stabilization.

11.2.0.28 Provide educational resources, training programs, and on-the-ground guidance to Nuisance Wildlife Control Operators (NWCOs) and the public to ensure that proper bat exclusion methods are followed when addressing issues of bats in buildings.

11.2.0.29 Provide educational resources, training programs, and on-the-ground guidance to Nuisance Wildlife Control Operators (NWCOs), conservation partners, and the public in conserving snake populations by advising proper removal from buildings, exclusion methods from buildings, and improving the public's understanding and acceptance of snakes.

11.2.1 With individuals and groups involved in resource management decision making: *Provision of professional training and technical assistance on fish and wildlife assessment and management to individuals and groups involved in resource management decision-making (e.g., provide agency-collected data to other governmental officials, train non-governmental organizations on new trapping methods, review of conservation-oriented policies and plans).*

11.2.1.1 Engage partners and stakeholders in constructive dialogue regarding the importance of providing and methods to provide technical support for carrying out restoration and management practices aimed at increasing structural habitat diversity.

11.2.1.2 Provide professional training and technical assistance tools (e.g., mapping, guidance documents, justification, etc.) to agencies/divisions/programs within and outside of the NJ DEP regarding the SWAP, and the conservation actions recommended therein to help facilitate SWAP implementation.

11.2.1.3 Provide educational resources, training programs, and on-the-ground guidance to DOD to improve DOD Integrated Natural Resource Management Plans (INRMP) to develop and implement forest management and other practices that minimize disturbances to SGCN (i.e., beyond their federal requirements).

11.2.1.4 Provide educational resources, training programs, and on-the-ground guidance to dredging companies and resource managers on habitat creation and enhancement away from and outside of shipping lanes, and to identify seasonal timing of activities that would minimize impacts to wildlife and their habitats.

11.2.1.5 Provide educational resources, training programs, and on-the-ground guidance to municipalities, state and federal agency resource managers on tasks such as writing and integrating Beach Management Plans into other management documents.

11.2.1.6 Provide educational resources, training programs, and on-the-ground guidance to resource agencies prior to project initiation to ensure wildlife and their habitats are protected to the highest degree possible during construction, and provisions are in place for post-construction habitat use.

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11.2.2 With private landowners: *Provision of technical assistance on fish and wildlife management practices to private landowners Note: Could Include development and delivery of economic incentives to private landowners to influence responsible stewardship of land/water and specific species.*

11.2.2.1 Provide technical support to farming operations and woodland landowners on ways to decrease clean farming (edge-to-edge) practices and create ecotones to benefit bobwhite and other species dependent on early successional habitat.

100 Law and Policy

100.1 Legislation: *A directive proposed by a legislative body (bills, laws, acts, statutes) within government.*

100.1.2 National Level

100.1.2.1 Create legislation to establish markets for warm-season grasses to increase the permanency of this crop on the landscape.

100.1.3 Sub-national Level

100.1.3.1 Develop laws and policies to increase protection and biological buffers of wetlands.

100.1.3.2 Develop policies for wetland restoration plans that consider life history requirements and needs of wildlife occupying targeted habitats.

100.1.3.3 Initiate legislative action to establish an annual budgetary line item designating funds to support programs focused on long-term research and monitoring of wildlife diseases.

100.1.3.4 Initiate legislative action to establish an annual budgetary line item designating funds to support programs and monitoring stations throughout Barnegat, Little Egg Harbor and Great Bay focused on long-term monitoring of submerged aquatic vegetation, both native and exotic species.

100.1.4 County and Local

100.1.4.1 Enhance critical migratory stopover habitats for songbirds, raptors, shorebirds, bats and invertebrates through the local ordinances of adjacent private lands to increase the effective size of the habitat.

100.1.4.2 Secure and increase the effective size of SGCN habitats and connect conserved SGCN habitats through local ordinances.

100.1.4.3 Expand the acreages and enhance the effective size of SGCN habitats by protecting adjacent habitats that contribute to the overall size of the "core" area and/or provide a natural buffer, enhancing the suitability of the core area for SGCN through local ordinances.

100.1.4.4 Secure wetlands, riparian and floodplain areas, and aquatic habitats (including open waters) and biologically appropriate buffers through local ordinances.

100.1.4.5 Secure SGCN-inhabited/used freshwater wetlands and biologically appropriate buffers through local ordinances.

100.1.4.6 Secure fish SGCN habitats by protecting lands adjacent to fish SGCN habitats and/or aquatic systems feeding into such habitats through local ordinances.

100.1.4.7 Secure vernal pools and biologically appropriate buffers through local ordinances.

100.1.4.8 Secure critical coastal habitats (beach/dune, scrub-shrub, forest, wetland, marsh, and marine and estuarine habitats) that provide nesting, migrating and wintering areas for SGCN birds, fish and other coastal SGCN through local ordinances.

100.1.4.9 Secure existing and developing old-growth forest stands with large trees, in particular those within large, contiguous forest tracts, through local ordinances.

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100.1.4.10 Secure critical SGCN forested habitat and minimize forest edge to benefit interior forest and disturbance-sensitive SGCN through local ordinances.

100.1.4.11 Secure riparian areas through local ordinances.

100.1.4.12 Secure scrub-shrub habitats for SGCN through local ordinances.

100.1.4.13 Encourage municipal laws regulating domestic pets that may predate on wildlife.

100.1.4.14 Adopt/pass local ordinances which require assessing and addressing secondary impacts (i.e. ancillary prescribed burns, trespassers, ORV use, mosquitoes, deer, buffers) on biological resources when revising planning/zoning documents or granted site plan/subdivision approvals.

100.1.4.15 Incorporate habitat connectivity and the preservation of natural areas into state and local land-use policy and the environmental review process to minimize habitat fragmentation and related threats associated with development.

100.1.5 Scale Unspecified

100.1.5.1 Develop laws and policies to increase protection and biological buffers of wetlands.

100.1.5.2 Develop policies for wetland restoration plans that consider life history requirements and needs of wildlife occupying targeted habitats.

100.1.5.3 Incorporate aquatic habitat connectivity and water quality/effluent standards into state/local policy to minimize the impact of aquaculture on fish and wildlife.

100.1.5.4 Incorporate habitat connectivity and preservation of natural areas into state and local land-use policy and the environmental review process to minimize the impacts of transportation and service corridors on fish and wildlife and their habitats.

100.1.5.5 Develop legislation to provide financial support for the New Jersey Invasive Species Strike Team.

100.3 State Regulations: *A specific requirement within legislation which details how the legislation is enforced; standards adopted as rules to implement, interpret, or make specific the law enforced or administered by legislation.*

100.3.0 Regulatory initiatives for species and habitat protection

100.3.0.1 Develop (and/or improve) policies and/or regulations that will promote the reduction of run-off and point and non-point source pollution into NJ's aquatic systems (streams, rivers, lakes/ponds, bays, ocean, wetlands, etc.).

100.3.0.2 Improve policies/regulations aimed at protecting and preserving critical coastal and marsh habitats and securing mitigation for losses that create an environmental benefit.

100.3.0.3 Develop policies that will promote the long term protection of critical migratory stopover habitats for songbirds, raptors, shorebirds, bats and invertebrates.

100.3.0.4 Promote policies and regulations that support marine conservation zone designations in suitable areas identified through research and literature.

100.3.0.5 Develop policies that will promote improved and secure habitat connections between conserved SGCN habitats.

100.3.0.6 Develop policies that will promote expanding acreages and enhancing the effective size of SGCN habitats by providing biologically appropriate buffers of native habitat surrounding SGCN habitats.

100.3.0.7 Amend current policies and/or regulations to increase the ability to protect and preserve coastal habitats (beach/dune, scrub-shrub, forest, wetland, marsh, and marine and estuarine habitats) that provide nesting, migrating, and wintering areas for SGCN birds, fish and other coastal and aquatic SGCN.

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			100.3.0.8 Develop policies and/or regulations with the objective of protecting significant natural and/or unique communities in perpetuity.
			100.3.0.9 Secure mitigation that creates an environmental benefit for losses of SGCN and their habitats.
			100.3.0.10 Develop policies that promote protecting vernal pool habitats to benefit SGCN that rely upon them and promotes connectivity of SGCN populations.
			100.3.0.11 Develop policies that will ensure the protection and/or development of old-growth forest stands with large trees, in particular those within large, contiguous forest tracts.
			100.3.0.12 Develop policies that promote the preservation and protection of critical SGCN forested habitat and minimize forest edge to benefit interior forest and disturbance-sensitive SGCN.
			100.3.0.13 Develop policies that will promote protecting and restoring riparian areas.
			100.3.0.14 Develop policies and/or regulations that increase the protective buffers of wetlands, riparian and floodplain areas, and aquatic habitats (including open waters) to biologically appropriate distances to benefit SGCN that rely upon these habitats and improve the function of the [associated] aquatic systems.
			100.3.0.15 Develop policies that promote protecting and restoring scrub-shrub habitats to benefit shrub-dependent SGCN.
			100.3.0.16 Create regulations that restrict human activity from staging areas for red knots and other migratory shorebirds.
			100.3.0.17 Develop and implement policies and/or regulations with the objective of reducing "by-catch" of SGCN and other non-target species.
			100.3.0.18 Develop policies for conserved lands that prohibit planting and supports the control of non-native vegetation and invasive, native vegetation.
			100.3.0.19 Develop regulations for lighting of/on tall structures that will minimize harm to and/or disorientation of wildlife, in particular but not limited to migratory birds, bats and invertebrates. Implement BMPs into state, county and local permitting processes.
			100.3.0.20 Develop policies and/or regulations that prohibit the presence of managed cat colonies and trap, neuter and release programs in or near critical wildlife habitats.
			100.3.0.21 Develop policies that minimize wildlife road mortality through: 1) Requiring the integration of wildlife passages into all new and repaired roads, in particular those areas that will connect SGCN habitats, 2) Requiring current fish/wildlife passages be improved and maintained in perpetuity, 3) Supporting seasonal road closures, in particular for unimproved roads, 4) Supporting projects that work to improve connectivity of SGCN habitats such as land conservation through acquisition or other means.
			100.3.0.22 Develop regulations that will protect urban-associated SGCN (restricting human access, buffering sensitive areas with postings, noise and/or light restrictions) in sensitive areas and/or during sensitive periods such as breeding, etc.
			100.3.0.23 Review existing CAFRA regulations and ensure that the Coastal Zone Management Rules (NJAC 7:7E) adequately address mitigation that creates an environmental benefit for losses of SGCN and their habitats.
			100.3.0.24 Create legislation to establish markets for warm-season grasses to increase the permanency of this crop on the landscape.
			100.3.0.25 Amend the harvest quota or "bag limits" within the freshwater fish code relative to SGCN or sensitive game species' as needed.
			100.3.0.26 Adopt regulations requiring the combined sewer overflow alternative analyses required by regulation address potential impacts to wildlife in watercourses or receiving water bodies.
			100.3.0.27 Amend harvest, license and/or permit requirements to incorporate guidance regarding the use of gear and/or tackle and current best practices to minimize bycatch or entanglement of non-target species.

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			100.3.0.28 Amend harvest, license and/or permit requirements to require mandatory reporting by permittees/licensees of lost harvest gear, by-catch and, entanglement of non-target species.
			100.3.0.29 Amend harvest, license and/or permit requirements to incorporate the exclusion devices and/or to require trap/pot designs with a quick-corrode feature which would render the device ineffective upon short-term sustained submersion.
			100.3.0.30 Amend the NJ Bureau of Marine Fisheries commercial licensing and harvest reporting system to require fishermen to report the number and location of lost pots to the appropriate state agency/agencies at the end of the harvest season.
			100.3.0.31 Create or expand tax-based incentive programs available to private, agricultural, commercial, industrial or governmental landowners and land managers to include or provide for incentives for the maintenance and/or improvement to existing habitat via the endorsement of wildlife-related BMPs.
			100.3.0.32 Coordinate regulations across agencies to maximize availability of and enrollment in existing Forestry Stewardship Programs (e.g., "Woodland Stewards", Farm Bill, partners, etc.) to maintain and/or improve forest habitat.
			100.3.0.33 Adopt additional timing restrictions, and any necessary permit conditions, into the Administrative Code for NJ DEP-permitted projects to minimize impacts on freshwater SGCN fish, in particular, within habitats during their vulnerable periods as identified through a thorough review of available information.
			100.3.0.34 Create legislation or policy that identifies River Herring/Alewife as a stock in the fishery thereby requiring its own Atlantic State Marine Fisheries management plan.
			100.3.0.35 Incorporate Freshwater Fish Status Assessment (Delphi Technique) results pertaining to endangered and threatened species into regulations.
			100.3.0.36 Create legislation to limit the amount of plastic from shopping bags in circulation and re-instate incentives for citizens bringing their own shopping bag to grocery store.
			100.3.0.37 Develop a law and/or policy that requires NJ DEP to continue to address and correct the allowable combined sewer overflow inputs of solid waste into the marine environment to minimize harm to wildlife and their habitats.
			100.3.0.38 Develop laws and/or policies to ensure appropriate and obligated financial compensation to NJDEP's Office of Natural Resource Restoration (and similar groups) for the purpose of marine habitat enhancement and wildlife research, and mitigation efforts address the disturbance of subtidal shallows and/or impacts to habitat and water quality from pollution.
			100.3.0.39 Develop laws and/or policies to ensure appropriate financial and obligated compensation to NJDEP's Office of Natural Resource Restoration (and similar groups) for the purpose of marine habitat enhancement and wildlife research, and mitigation efforts address the impacts of invasive, non-native aquatic plant species establishing themselves or thriving as a result of illegal actions.
			100.3.0.40 Develop laws and/or policies to require vegetative buffers of native plants on preserved farmland and state lands with agricultural leases or agreements.
			100.3.0.41 Explore all State regulatory requirements for mitigation, restoration, habitat management, etc. to ensure they prohibit the use of specified invasive or other problematic plant species.
			100.3.0.42 Fully adopt the former Storm water Management Rules' 300ft buffer requirements into the Flood Hazard Area Control Act Rules.
			100.3.0.43 Identify and address (amend) regulatory impediments to beneficial habitat management.
			100.3.0.44 Incorporate requirements for technical support and funding for mitigation or restoration efforts so as to be consistent with existing regulations.
			100.3.0.45 Increase the controlled burn season to focus on restoring vegetative communities.
			100.3.0.46 Investigate and/or develop inter-agency Memorandum of Agreements to share common data stored or managed in program-specific databases.

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			100.3.0.47 Investigate regulatory options available to direct the location or citing of aquaculture activities in Aquaculture development zone 4 (Delaware Bay area) in a manner which minimizes the loss of wildlife habitats and adverse impacts to the environment.
			100.3.0.48 Propose new State law or regulation mandating that a State-level "development impact fee" be assessed on all new development approved by municipalities (via the Municipal Land Use Law processes), and dedicate such monies to the development and implementation of regional Habitat Conservation Plans (or existing plans/programs serving the same regional function).
			100.3.0.49 Review existing CAFRA regulations and ensure that the Coastal Zone Management Rules (NJAC 7:7E) adequately address the issue of disturbance to habitat or species as a result of human activities (e.g., construction, bridge maintenance, road work, etc.).
			100.3.0.50 Retain endangered, threatened and special concern wildlife and habitat protection measures in the Water Quality Management Program Rules.
			100.3.0.51 Amend the harvest quota or "bag limits" within the marine fish code enforcement policies relative to SGCN or sensitive game species' as needed.
			100.3.0.52 Revise existing and/or incorporate new State land use regulations that specifically address the impacts of new or expanded energy sitings and facilities.
			100.3.0.53 Revise existing and/or incorporate new State land use regulations that specifically address the impacts of new or expanded rights-of-way corridors associated with energy transport/transmission.
			100.3.0.54 Revise existing and/or incorporate new State land use regulations that specifically address the impacts of new or expanded surface mining areas.
			100.3.0.55 Develop regulations to address potentially adverse effects of aquaculture on SGCN species and their habitats.
			100.3.0.56 Develop regulations that when implemented will protect critical migratory stopover habitats for songbirds, raptors, shorebirds, bats and invertebrates.
			100.3.0.57 Develop regulations that when implemented will improve and secure habitat connections between conserved SGCN habitats.
			100.3.0.58 Develop regulations that when implemented will promote the expansion of acreages and enhancement of the effective size of SGCN habitats by providing biologically appropriate buffers of native habitat surrounding SGCN habitats.
			100.3.0.59 Develop regulations that when implemented will increase the ability to protect and preserve coastal habitats (beach/dune, scrub-shrub, forest, wetland, marsh, and marine and estuarine habitats) that provide nesting, migrating, and wintering areas for SGCN birds, fish and other coastal and aquatic SGCN.
			100.3.0.60 Develop regulations that when implemented will protect significant natural and/or unique communities in perpetuity.
			100.3.0.61 Develop regulations that when implemented will protect vernal pool habitats to benefit SGCN that rely upon them and promotes connectivity of SGCN populations.
			100.3.0.62 Develop regulations that when implemented will protect existing old-growth forest stands with large trees and/or stands that are being actively managed for old growth forests, in particular those within large, contiguous forest tracts.
			100.3.0.63 Develop regulations that when implemented will preserve and protect critical SGCN forested habitat and minimize forest edge to benefit interior forest and disturbance-sensitive SGCN.
			100.3.0.64 Develop regulations that when implemented will protect and restore riparian areas.
			100.3.0.65 Develop regulations that when implemented will protect and restore scrub-shrub habitats to benefit shrub-dependent SGCN.
			100.3.0.66 Develop regulations with the objective of reducing "by-catch" of SGCN and other non-target species.
			100.3.0.67 Develop regulations for lighting of/on tall structures that will minimize harm to and/or disorientation of wildlife, and enforce within state, county and local permitting processes.

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100.3.0.68 Develop regulations that when implemented will prohibit the presence of managed cat colonies and trap, neuter and release programs in or near critical wildlife habitats.

100.3.0.69 Develop regulations that when implemented will minimize wildlife road mortality.

100.3.0.70 Develop regulations that when implemented will facilitate the restoration of dynamic forest disturbance patterns, using tools such as fire, flooding, and silviculture, to support the full life cycle requirements of forest and early successional wildlife species.

100.3.0.71 Develop regulations for licensing, permitting, or certification of Nuisance Wildlife Control Operators (NWCOs) that handle removal/exclusion of protected wildlife, such as bats and snakes, to ensure that proper methods are followed and that occurrences are reported.

100.3.0.72 Develop policies and/or regulations that require permit applicants and reviewers to assess the impacts of proposed projects with consideration to the cumulative and synergistic effects over time and over a larger spatial scale beyond the project site.

100.3.0.73 Develop regulations that when implemented will render the conversion of lawns to native vegetation beneficial for wildlife exempt from local lawn ordinances.

100.3.2 State Land Acquisition Programs

100.3.2.1 Increase opportunities for habitat restoration by making any necessary policy changes to state, federal and local land acquisition programs (e.g., Green Acres, Blue Acres, etc.) to allow for acquisition within abandoned or failing bay shore communities, including mechanisms to relocate displaced people and infrastructure.

100.4 State Agency Policy Integration

100.4.0 Policy initiatives for species and habitat protection

100.4.0.1 Create any necessary policy changes (including those to incentive programs) to encourage the integration of SWAP actions associated with SGCN priority habitats as a deliberative factor in agencies' actions (e.g., environmental and land management review processes, land acquisition and management).

100.4.0.2 Create a policy that requires the NJ DEP to incorporate scientific information regarding climate change and sea level rise (e.g., predictions, habitat management/acquisition efforts to enhance resilience to inundation) on their websites and to work with other government entities, conservation organizations and other stakeholders to work together to collaboratively use social media campaigns to grow a constituency of NJ residents who have an elevated ecological and climate consciousness.

100.4.0.3 Develop policies for mandatory buffer strips on preserved farmlands and state-owned agricultural lands.

100.4.0.4 Create a policy that requires the use of CHANJ mapping for both regulatory use when conducting project reviews and planning/siting new or expanded rights-of-way projects. CHANJ mapping will assist in identifying SGCN habitats to avoid and/or where impact minimization strategies will likely be required.

100.4.0.5 Create a policy that requires an initial and subsequent updates of a comprehensive marine submerged aquatic vegetation mapping for use by NJ DEP's coastal regulatory program.

100.4.0.6 Create legislation or policy that identifies River Herring/Alewife as a stock in the fishery thereby requiring its own Atlantic State Marine Fisheries management plan.

100.4.0.7 Develop a law and/or policy that requires NJ DEP to continue to address and correct the allowable combined sewer overflow inputs of solid waste into the marine environment to minimize harm to wildlife and their habitats.

100.4.0.8 Develop a white paper addressing the impacts that existing, new or expanded rights-of-way have upon wildlife, wildlife habitats and habitat connectivity.

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100.4.0.9 Develop and implement policies to minimize the removal of coarse, woody debris in terrestrial, aquatic and riparian habitats in order to benefit wildlife.

100.4.0.10 Develop laws and/or policies to ensure appropriate and obligated financial compensation to NJDEP's Office of Natural Resource Restoration (and similar groups) for the purpose of marine habitat enhancement and wildlife research, and mitigation efforts address the disturbance of subtidal shallows and/or impacts to habitat and water quality from pollution.

100.4.0.11 Develop laws and/or policies to ensure appropriate financial and obligated compensation to NJDEP's Office of Natural Resource Restoration (and similar groups) for the purpose of marine habitat enhancement and wildlife research, and mitigation efforts address the impacts of invasive, non-native aquatic plant species establishing themselves or thriving as a result of illegal actions.

100.4.0.12 Develop laws and/or policies to require vegetative buffers of native plants on preserved farmland and state lands with agricultural leases or agreements.

100.4.0.13 Develop policies for different circumstances (e.g., roadsides and medians, riparian, aquatic and terrestrial habitats) that outline appropriate habitat/vegetation management strategies and schedules to minimize risks to and benefit wildlife.

100.4.0.14 Develop policies to facilitate agreements between eligible entities to manage appropriate conserved lands for grassland-dependent species, and to have access to/obtain restoration funds.

100.4.0.15 [*Reserved**]

100.4.0.16 Develop policies to implement habitat management strategies that will increase the structural diversity surrounding areas used for energy, mining, and transportation and service corridors which include but are not limited to the presence of short and tall grasses, specific host plants, brush piles, water sources/wetlands, shrubby areas, nesting areas, and no-mow set-asides.

100.4.0.17 Develop policies to implement habitat management strategies, including prescribed burns, that will increase the structural diversity on preserved farmlands, state-owned agricultural lands, forests, parks and wildlife management areas, and any conserved lands purchased with the assistance of Green Acres and Federal Land & Water Conservation Fund monies to control and reduce the impacts of invasive, non-native species in order to increase structural habitat diversity.

100.4.0.18 Develop policies to minimize the extent of infrastructure associated with energy and service corridors or areas (e.g., wind and solar farms, pipelines, utility lines) and that require the implementation of habitat management strategies that will increase the structural diversity in the area including (e.g., the presence of short and tall grasses, specific host plants, brush piles, water sources/wetlands, shrubby areas, nesting areas, and no-mow set-asides).

100.4.0.19 Develop regulations that will minimize the creation of new barriers, remove or replace current barriers with appropriately-sized systems to accommodate wildlife dispersal, and to minimize road widening and traffic volume increases within critical wildlife habitat areas.

100.4.0.20 Develop state regulations that require energy developers and utility service companies to implement habitat management strategies that will increase the structural diversity of the habitat, minimize habitat fragmentation and commercial infrastructure, and minimize the loss, alteration and/or degradation of the habitat and adjacent lands when working on preserved farmlands, state-owned agricultural lands, forests, parks and wildlife management areas, and any conserved lands purchased with the assistance of Green Acres and Federal Land & Water Conservation Fund monies.

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* "Reserved" indicates placeholders for future edits or additions.

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			100.4.0.21 Ensure that Section 303(d) of the Clean Water Act and applicable State statutory/regulatory requirements for surface water pollutant budgets are being met by monitoring and enforcing regulatory Total Maximum Daily Load (TMDL) targets established within regional Water Quality Management Plans.
			100.4.0.22 Work with NJ DEP's Division of Land Use Regulation to ensure protection of listed species and their habitats during stream cleaning events.
			100.4.0.23 Adopt additional timing restrictions, and any necessary permit conditions, into the Administrative Code for NJ DEP-permitted projects to minimize impacts on freshwater SGCN fish, in particular, within habitats during their vulnerable periods as identified through a thorough review of available information.
			100.4.0.24 Develop policies to provide financial support for the New Jersey Invasive Species Strike Team.
			100.4.0.25 Develop policies and/or regulations that require permit applicants and reviewers to assess the impacts of proposed projects with consideration to the cumulative and synergistic effects over time and over a larger spatial scale beyond the project site.