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- Figure 1.** Multi-Resolution Land Cover map of the Susquehanna Basin.

**Susquehanna Table 1.** Multi-Resolution Land Classification (MRLC) land cover classifications and corresponding percent cover in the Susquehanna Basin.

<b>Classification</b>	<b>% Cover</b>
Deciduous Forest	37.97
Mixed Forest	27.07
Row Crops	14.24
Pasture/Hay	12.69
Evergreen Forest	4.16
Low Intensity Residential	1.19
Water	0.82
Parks, Lawns, Golf Courses	0.58
Woody Wetlands	0.5
High Intensity Commercial/Industrial	0.44
High Intensity Residential	0.26
Barren; Quarries, Strip Mines, Gravel Pits	0.05
Emergent Wetlands	0.04

**Susquehanna Table 2.** State Parks within the Susquehanna Basin.

<b>Unit Name (DEC Region)</b>	<b>Acres</b>	<b>Primary Natural Habitats</b>
BETTY & WILBUR DAVIS (7)	200	X
BOWMAN LAKE (7)	702	UPLAND
BUTTERMILK FALLS (8)	733	UPLAND/WETLAND
CHENANGO VALLEY (7)	1,098	UPLAND
GILBERT LAKE (7)	1,572	UPLAND
GLIMMERGLASS (7)	587	UPLAND
HUNTS POND (7)	239	X
NEWTOWN BATTLEFIELD (8)	339	X
PINNACLE (8)	704	UPLAND

**Susquehanna Table 3.** Draft Audubon Important Bird Areas within the Susquehanna Basin.

<b>Unit Name (DEC Region)</b>	<b>Acres</b>	<b>Approved Criteria</b>
LONG POND STATE FOREST (7)	3,100	SPECIES AT RISK
PHARSALIA WOODS (7)	23,000	FOREST
TIOUGHNIOGA RIVER/WHITNEY POINT (7)	17,600	SHRUB/SCRUB
CANNONSVILLE/STREAM MILL AREA (7)	65,000	FOREST/SPECIES AT RISK

**Susquehanna Table 4. Critical Environmental Areas within the Susquehanna Basin.**

<b>Unit Name (DEC Region)</b>	<b>Location</b>	<b>Approved Criteria</b>
FRENCH TRACT (7)	VESTAL	NONE GIVEN
WELL FIELD (7)	VESTAL	PRIMARY RECHARGE FOR WELL FIELDS
WATER BOARD (7)	CORTLAND	SOLE SOURCE AQUIFER PROTECTION
GROUNDWATER PROTECTION	MCGRAW	GROUNDWATER PROTECTION
VALLEY-FILL AQUIFER (8)	WAYLAND	PRIMARY SOURCE OF DRINKING WATER

**Susquehanna Table 5.** NYSDEC land units within the Susquehanna Basin.

Unit Name (DEC Region)	Acres	Primary Natural Habitats
STATE FORESTS (approximately 136)	260,395	MULTIPLE
LABRADOR HOLLOW UNIQUE AREA	1,487	X
CONNECTICUT HILL WMA (7)	11,645	UPLAND
CRUMHORN MOUNTAIN WMA (4)	69	X
ERWIN WMA (8)	2490	UPLAND
HELMER CREEK WMA (8)	113	UPLAND
HOOKER MOUNTAIN WMA (4)	83	X
PHARSALIA WMA (7)	4699	UPLAND/WETLAND
TIOUGHNIOGA WMA (7)	3705	UPLAND
WANETA LAMOKA WMA (8)	165	WETLAND
WEST CAMERON WMA (8)	170	UPLAND
WHITNEY POINT MUA (7)	4,645	UPLAND/WETLAND

**Susquehanna Table 6.** Critical **aquatic** habitats found in Susquehanna basin, classified at the system and sub-system level, adapted from Edinger et al. (2002). The number of SGCN that indicate each system/sub-system association as a critical habitat is indicated.

<b>System</b>	<b>Sub-System</b>	<b># of Species</b>
Lacustrine	cold water deep	3
Lacustrine	cold water shallow	3
Lacustrine	unknown	1
Lacustrine	warm water deep	2
Lacustrine	warm water shallow	6
Palustrine	mineral soil wetland	16
Palustrine	peatlands	6
Riverine	coldwater stream	17
Riverine	deepwater river	4
Riverine	warm water stream	11

**Susquehanna Table 7.** Critical **terrestrial** habitats found in Susquehanna basin, classified at the system and sub-system level, adapted from Edinger et al. (2002). The number of SGCN that indicate each system/sub-system association as a critical habitat is indicated.

<b>System</b>	<b>Sub-System</b>	<b># of Species</b>
Terrestrial	barrens/woodlands	15
Terrestrial	forested	38
Terrestrial	open upland	36
Unknown	unknown	1

**Susquehanna Table 8. Susquehanna species diversity relative to the total number of SGCN statewide.**

Taxa Group	# Species Groups in the Basin	# Species in the Basin	Total # SGCN	% of Total SGCN for this Group
<b>BIRDS</b>	<b>8</b>	<b>39</b>	<b>118</b>	<b>33.1</b>
Bald Eagle		1		
Common Nighthawk		1		
Deciduous/Mixed Forest Breeding Birds		7	9	77.8
Early Successional Forest Birds		11	12	91.7
Forest Breeding Raptors		6	6	100.0
Freshwater Marsh Nesting Birds		2	6	33.3
Grassland Birds		10	11	90.9
Peregrine Falcon		1		
<b>FRESHWATER FISH</b>	<b>4</b>	<b>4</b>	<b>40</b>	<b>10.0</b>
Blackchin Shiner		1		
Heritage-Strain Brook Trout		1		
Comely Shiner		1		
Swallowtail Shiner		1		
<b>HERPETOFAUNA</b>	<b>9</b>	<b>17</b>	<b>44</b>	<b>38.6</b>
Freshwater Wetland Amphibians		1	5	20.0
Hellbender		1		
Lake/River Reptiles		2	5	40.0
Lizards		1	3	33.3
Snapping Turtle		1		
Stream Salamanders		2	2	100.0
Uncommon Turtles of Wetlands		1	5	20.0
Vernal Pool Salamanders		2	4	50.0
Woodland/Grassland Snakes		6	8	75.0
<b>INSECT</b>	<b>7</b>	<b>21</b>	<b>197</b>	<b>10.7</b>
Odonates of Bogs/Fens/Ponds		1	10	10.0
Odonates of Lakes/Ponds		2	5	40.0
Odonates of Rivers/Streams		5	19	26.3
Odonates of Seeps/Rivulets		1	4	25.0
Other Butterflies		8	18	44.4
Other Moths		1	92	1.1
Stoneflies/Mayflies of Lotic Waters		3	20	15.0
<b>MAMMAL</b>	<b>2</b>	<b>4</b>	<b>21</b>	<b>19.0</b>
Furbearers		1	2	50.0
Tree Bats		3	3	100.0
<b>MARINE FISH</b>	<b>2</b>	<b>2</b>	<b>51</b>	<b>3.9</b>
American Eel		1		
American Shad		1		

Susquehanna Table 8. (continued)

Taxa Group	# Species Groups in the Basin	# Species in the Basin	Total # SGCN	% of Total SGCN for this Group
<b>MOLLUSK</b>	1	3	59	5.1
Freshwater Bivalves		9	39	7.7
<b>TOTAL</b>	<b>33</b>	<b>90</b>	<b>530</b>	<b>17.0</b>
<b>% of All Species Groups Statewide</b>	<b>25.80%</b>			

**Susquehanna Table 9.** Species of Greatest Conservation Need currently occurring in the Susquehanna Basin. Species are sorted alphabetically by taxonomic group and species common name. The Species Group designation is included, indicating which Species Group Report in the appendix will contain the full information about the species. The Stability of this basin's population is also indicated for each species.

TaxaGroup	Species	SpeciesGroup	Stability
Bird	American bittern	Freshwater marsh nesting birds	Decreasing
Bird	American woodcock	Early successional forest/shrubland birds	Decreasing
Bird	Bald eagle	Bald Eagle	Increasing
Bird	Black-billed cuckoo	Early successional forest/shrubland birds	Decreasing
Bird	Black-throated blue warbler	Deciduous/mixed forest breeding birds	Stable
Bird	Blue-winged warbler	Early successional forest/shrubland birds	Decreasing
Bird	Bobolink	Grassland birds	Decreasing
Bird	Brown thrasher	Early successional forest/shrubland birds	Decreasing
Bird	Canada warbler	Early successional forest/shrubland birds	Decreasing
Bird	Cerulean warbler	Deciduous/mixed forest breeding birds	Increasing
Bird	Common nighthawk	Common nighthawk	Decreasing
Bird	Cooper's hawk	Forest breeding raptors	Stable
Bird	Eastern meadowlark	Grassland birds	Decreasing
Bird	Golden eagle	Forest breeding raptors	Unknown
Bird	Golden-winged warbler	Early successional forest/shrubland birds	Decreasing
Bird	Grasshopper sparrow	Grassland birds	Decreasing
Bird	Henslow's sparrow	Grassland birds	Decreasing
Bird	Horned lark	Grassland birds	Decreasing
Bird	Kentucky warbler	Deciduous/mixed forest breeding birds	Unknown
Bird	Long-eared owl	Forest breeding raptors	Unknown
Bird	Northern goshawk	Forest breeding raptors	Increasing
Bird	Northern harrier	Grassland birds	Unknown
Bird	Peregrine falcon	Peregrine falcon	Stable
Bird	Pied-billed grebe	Freshwater marsh nesting birds	Decreasing
Bird	Prairie warbler	Early successional forest/shrubland birds	Increasing
Bird	Prothonotary warbler	Deciduous/mixed forest breeding birds	Unknown
Bird	Red-headed woodpecker	Deciduous/mixed forest breeding birds	Decreasing
Bird	Red-shouldered hawk	Forest breeding raptors	Increasing
Bird	Ruffed grouse	Early successional forest/shrubland birds	Decreasing
Bird	Sedge wren	Grassland birds	Unknown
Bird	Sharp-shinned hawk	Forest breeding raptors	Increasing
Bird	Short-eared owl	Grassland birds	Unknown
Bird	Upland sandpiper	Grassland birds	Decreasing
Bird	Vesper sparrow	Grassland birds	Decreasing
Bird	Whip-poor-will	Early successional forest/shrubland birds	Decreasing
Bird	Willow flycatcher	Early successional forest/shrubland birds	Decreasing
Bird	Wood thrush	Deciduous/mixed forest breeding birds	Decreasing
Bird	Worm-eating warbler	Deciduous/mixed forest breeding birds	Unknown
Bird	Yellow-breasted chat	Early successional forest/shrubland birds	Stable
Freshwater fish	Blackchin shiner	Blackchin shiner	Unknown
Freshwater fish	Brook trout, Heritage strains	Brook trout, Heritage strains	Stable
Freshwater fish	Cornely shiner	Cornely shiner	Unknown
Freshwater fish	Swallowtail shiner	Swallowtail shiner	Unknown
Herpetofauna	Black ratsnake	Woodland/grassland snakes	Decreasing
Herpetofauna	Blue-spotted salamander	Vernal pool salamanders	Unknown
Herpetofauna	Coal skink	Lizards	Unknown
Herpetofauna	Eastern hognose snake	Woodland/grassland snakes	Unknown
Herpetofauna	Eastern ribbonsnake	Lake/river reptiles	Unknown
Herpetofauna	Four-toed salamander	Freshwater wetland amphibians	Unknown
Herpetofauna	Hellbender	Hellbender	Decreasing
Herpetofauna	Jefferson salamander	Vernal pool salamanders	Unknown
Herpetofauna	Longtail salamander	Stream salamanders	Decreasing
Herpetofauna	Northern black racer	Woodland/grassland snakes	Unknown
Herpetofauna	Northern red salamander	Stream salamanders	Unknown
Herpetofauna	Short-headed gartersnake	Woodland/grassland snakes	Decreasing
Herpetofauna	Smooth greensnake	Woodland/grassland snakes	Unknown
Herpetofauna	Snapping turtle	Snapping Turtle	Unknown
Herpetofauna	Spotted turtle	Uncommon turtles of wetlands	Unknown
Herpetofauna	Timber rattlesnake	Woodland/grassland snakes	Decreasing
Herpetofauna	Wood turtle	Lake/river reptiles	Unknown
Insect	A mayfly	Stoneflies/Mayflies of lotic waters	Unknown
Insect	A mayfly	Stoneflies/Mayflies of lotic waters	Unknown
Insect	A mayfly	Stoneflies/Mayflies of lotic waters	Unknown
Insect	American rubyspot	Odonates of rivers/streams	Unknown
Insect	Arrow clubtail	Odonates of rivers/streams	Unknown
Insect	Arrowhead spiketail	Odonates of seeps/rivulets	Unknown
Insect	Cobra clubtail	Odonates of rivers/streams	Unknown
Insect	Comet darner	Odonates of lakes/ponds	Unknown
Insect	Frosted elfin	Other butterflies	Decreasing
Insect	Henry's elfin	Other butterflies	Unknown
Insect	Mottled duskywing	Other butterflies	Decreasing
Insect	Ostrich fern borer moth	Other moths	Unknown
Insect	Persius duskywing	Other butterflies	Unknown
Insect	Rapids clubtail	Odonates of rivers/streams	Unknown
Insect	Regal fritillary	Other butterflies	Unknown
Insect	Silvery blue	Other butterflies	Decreasing
Insect	Southern grizzled skipper	Other butterflies	Unknown

Susquehanna Table 9. (continued)

TaxaGroup	Species	SpeciesGroup	Stability
Insect	Spatterdock damer	Odonates of lakes/ponds	Unknown
Insect	Spine-crowned clubtail	Odonates of rivers/streams	Unknown
Insect	Subarctic damer	Odonates of bogs/fens/ponds	Unknown
Insect	Tawny crescent	Other butterflies	Decreasing
Mammal	Eastern red bat	Tree bats	Unknown
Mammal	Hoary bat	Tree bats	Unknown
Mammal	River otter	Furbearers	Stable
Mammal	Silver-haired bat	Tree bats	Unknown
Marine fish	American eel	American eel	Unknown
Marine fish	American shad	American shad	Unknown
Mollusk	Brook floater	Freshwater bivalves	Unknown
Mollusk	Green floater	Freshwater bivalves	Unknown
Mollusk	Yellow lamp mussel	Freshwater bivalves	Stable

**Susquehanna Table 10.** SGCN that historically occurred in Susquehanna Basin, but are now believed to be extirpated from the basin.

Taxa Group	Species	Species Group
Bird	American black duck	Breeding waterfowl
Bird	Barn owl	Barn owl
Bird	Blue-winged teal	Breeding waterfowl
Bird	Loggerhead shrike	Loggerhead Shrike
Bird	Louisiana waterthrush	Deciduous/mixed forest breeding birds
Bird	Scarlet Tanager	Deciduous/mixed forest breeding birds
Crustacea/Meristomata	Piedmont groundwater amphipod	Freshwater crustacea
Herpetofauna	Bog turtle	Uncommon turtles of wetlands
Insect	A looper moth ( <i>Lambdina canitiaria</i> )	Other moths
Insect	A Mayfly ( <i>Leucrocuta thetis</i> )	Stoneflies/Mayflies of uncertain/questionable habitat
Insect	Ebony boghaunter	Odonates of bogs/fens/ponds
Insect	Pygmy snaketail	Odonates of rivers/streams
Mammal	Eastern cougar	Extirpated large mammals
Mammal	Gray wolf	Extirpated large mammals
Mammal	Least shrew	Small mammals of uncertain/questionable residency
Mollusk	Elktoe	Freshwater bivalves
Mollusk	Lance aplesa	Freshwater gastropods
Mollusk	Spindle lymnaea	Freshwater gastropods
Mollusk	Tidewater mucket	Freshwater bivalves

**Susquehanna Table 11.** Summary of threats, number of (and percent of all) species groups affected, and percentage of all threats to SGCN in the Susquehanna Basin. For details on threats, see Appendix: *Threats Characterization for Wildlife and Their Habitats*.

Threats	# of Species Groups Affected	% of All Spp Groups in Basin	% of All Threats in Basin
Multiple <sup>a</sup>	33	100	13.8
Habitat loss - conversion to cultural	20	60.6	8.3
Contaminants	16	48.5	6.7
Degradation of water quality	15	45.5	6.3
Human disturbance - illegal/unreg. Harvest	13	39.4	5.4
Altered hydrology (loss of aquatic habitat quantity)	12	36.4	5
Habitat fragmentation	10	30.3	4.2
Human disturbance - collisions	10	30.3	4.2
Disturbed predator/prey cycles	10	30.3	4.2
Habitat loss - natural	8	24.2	3.3
Disease	7	21.2	2.9
Competition for life support	7	21.2	2.9
Competition from exotics	6	18.2	2.5
Unsustainable Ag/Silvicultural Practices	6	18.2	2.5
Sedimentation/Erosion	6	18.2	2.5
Human disturbance - general	5	15.2	2.1
Active alteration of natural processes	5	15.2	2.1
Loss of streamside buffers	4	12.1	1.7
Altered hydrology (loss of aquatic habitat quality)	4	12.1	1.7
Reduction of patch size, shape, area	4	12.1	1.7
Loss of habitat connectivity	4	12.1	1.7
Habitat composition altered by invasives	3	9.1	1.3
Human disturbance - entanglement/entrainment	3	9.1	1.3
Detrimental hybridization	3	9.1	1.3
Susceptibility to stochastic events (isolated populations)	3	9.1	1.3
Susceptibility to stochastic events (rare species)	3	9.1	1.3
Unknown threats	3	9.1	1.3
Barriers (roads; development; curbs)	2	6.1	0.8
Pollution (acid rain; soil contamination)	2	6.1	0.8
Habitat composition altered by invasives	2	6.1	0.8
Habitat composition altered by overuse (deer browse)	2	6.1	0.8
Loss of host species	2	6.1	0.8
Susceptibility to stochastic events (weather; storm events)	2	6.1	0.8
Habitat composition altered by overuse (beaver, geese, etc)	1	3	0.4
Human created abrupt edges	1	3	0.4
Parasites	1	3	0.4
Climate change (sea level rise; temp changes)	1	3	0.4
Climate change (range restriction; changes in distribution)	1	3	0.4

<sup>a</sup> Multiple = recommended action addresses multiple threats rather than one specific threat

**Susquehanna Table 12.** Existing management plans and agreements within the Susquehanna Basin

Plan/Agreement Name	Involved Parties	Information
River Basins - March 2002	NYSDEC	Basin overview; recommendations for restoring water quality
Forest Fragmentation in the Chesapeake Bay Watershed - Ecological, Economic, Policy and Law Impacts - 1998	Society of American Foresters	Ecological, economic, policy and law impacts from fragmentation
Susquehanna River Basin Commission 2001 Annual Report	Susquehanna River Basin Commission	Basin highlights; hydrologic conditions; flood events, achievements
Upper Susquehanna Coalition Strategic Planning Session - January 2003 Academic Institutions	Upper Susquehanna Coalition GIS capabilities, sediment fingerprinting; stream flows; wetlands	