Tennessee 2025 State Wildlife Action Plan

Appendix G

Problems Affecting Species and Habitats

CMP Level 1	CMP Level 2 Label	TN SWAP Level 3 Label	CMP Level 2 Descriptor	Examples, not comprehensive	Description
1. Residential & Commercial Development	1.1	A	Housing & urban areas - Primary residential development	urban areas, suburbs, villages, vacation homes, shopping areas, offices, schools, hospitals	Destruction or degradation of habitats due to construction activities associated with the building of primary residences. This category dovetails somewhat arbitrarily with 1.2 Commercial and Industrial Areas. As a general rule, however, if people live in the development, it should fall into this category.
1. Residential & Commercial Development	1.1	B	Housing & urban areas - Secondary home/resort development	urban areas, suburbs, villages, vacation homes, shopping areas, offices, schools, hospitals	Destruction or degradation of habitats due to construction activities associated with the building of secondary/vacation homes and resort developments.
1. Residential & Commercial Development	1.2	A	Commercial & industrial areas	manufacturing plants, shopping centers, office parks, military bases, power plants, train & ship yards, airports	Destruction or degradation of habitats in an area due to construction and other activities related to the development of commercial or industrial buildings. Shipyards and airports fall into this category, whereas shipping lanes and flight paths fall under 4. Transportation & Service Corridors. Dams are NOT included here, rather they are in 7.2 Dams & Water Management / Use.
1. Residential & Commercial Development	1.2	B	Commercial & industrial areas -Landfill construction/ operation (one sp)	manufacturing plants, shopping centers, office parks, military bases, power plants, train & ship yards, airports	Destruction or degradation of habitats due to construction and maintenance of county or municipal landfill operations. Also, includes habitat degradation and increased mortality caused by releases of toxins and other contaminants into the environment.
1. Residential & Commercial Development	1.2	C	Commercial & industrial areas -Military maneuvers	manufacturing plants, shopping centers, office parks, military bases, power plants, train & ship yards, airports	Increased mortality of species or destruction / degradation of habitats due to the use of heavy vehicles or explosives on the landscape during military exercises.
Residential & Commercial Development	1.3	A	Tourism & recreation areas*	ski areas, golf courses, beach resorts, cricket fields, county parks, campgrounds	There is a fine line between housing and vacation housing/resorts. Be careful not to confuse this category, which focuses on the habitat effects of recreation areas, with those in 6.1 Recreational Activities, which focuses on the disturbance effects posed by recreation.
2. Agriculture and Aquaculture	2.1	A	Annual & perennial non- timber crops - Agricultural conversion (row crop; mostly historical)	farms, household swidden plots, plantations, orchards, vineyards, mixed agroforestry systems	Removal of the natural vegetation of an area for agricultural purposes such as: pasture, row crops, feed lots, outbuildings, etc.

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2. Agriculture and Aquaculture	2.1	B	Annual & perennial non- timber crops - Incompatible row crop agricultural practices	farms, household swidden plots, plantations, orchards, vineyards, mixed agroforestry systems	Degradation of soil - water quality or habitat structure related to row crop production and maintenance not compatible with species needs. Often due to erosion from plowing/tilling or chemical applications of herbicides/ pesticides.
2. Agriculture and Aquaculture	2.2	A	Wood and pulp plantations	teak or eucalyptus plantations, silviculture, christmas tree farms	If it is one or a couple timber species that are planted on a rotation cycle, it belongs here. If it is multiple species or enrichment plantings in a quasi-natural system, it belongs in 5.3 Logging & Wood Harvesting.
Agriculture and Aquaculture	2.3	A	Livestock farming & ranching - Agricultural conversion (livestock, mostly historical)	cattle feed lots, dairy farms, cattle ranching, chicken farms, goat, camel, or yak herding	In farming, animals are kept in captivity; in ranching they are allowed to roam in wild habitats. If a few animals are mixed in a subsistence cropping system, it belongs in 2.1 Annual & Perennial Non-Timber Crops. Forage of wild resources for stall-fed animals falls under 5.2 Gathering Terrestrial Plants.
Agriculture and Aquaculture	2.3	B	Livestock farming & ranching - Incompatible animal production practices	cattle feed lots, dairy farms, cattle ranching, chicken farms, goat, camel, or yak herding	Degradation of soil & water quality via improper management of animal waste or chemical applications required during the rearing of livestock or other farm animals raised in concentrated conditions.
Agriculture and Aquaculture	2.3	C	Livestock farming & ranching - Incompatible grazing/ pasture management practices	cattle feed lots, dairy farms, cattle ranching, chicken farms, goat, camel, or yak herding	Degradation of soil & water quality and habitat structure of an area due to excessive grazing or to Inappropriate exclusion of cattle from stream and forest resources. Also, includes degradation caused by overapplication of fertilizers or other chemicals during pasture management practices.
Energy Production & Mining	3.1	A	Oil & gas drilling	oil wells, deep sea natural gas drilling	Oil and gas pipelines go into 4.2 Utility & Service Lines. Oil spills that occur at the drill site should be placed here; those that come from oil tankers or pipelines should go in 4. Transportation & Service Corridors or in 9.2 Industrial & Military Effluents, depending on your perspective.
Energy Production & Mining	3.2	A	Mining & quarrying	coal mines, alluvial gold panning, gold mines, rock quarries, coral mining, deep sea nodules, guano harvesting	It is a judgement call whether deforestation caused by strip mining should be in this category or in 5.3 Logging & Wood Harvesting - it depends on whether the primary motivation for the deforestation is access to the trees or to the minerals. Sediment or toxic chemical runoff from mining should be placed in 9.2 Industrial & Military Effluents if it is the major threat from a mining operation.
Energy Production & Mining	3.3	A	Renewable energy*	geothermal power production, solar farms, wind farms (including birds or bats flying into windmills), tidal farms	Not relating to hydropower (in 7.2)

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Transportation & Service Corridors	4.1	A	Roads & Railroads	highways, secondary roads, logging roads, bridges & causeways, road kill, fencing associated with roads, railroads	Destruction or degradation of habitats in an area due to construction of roads, railroads, or utilities. The linear makeup of these corridors often fragment terrestrial habitats.
Transportation & Service Corridors	4.2	A	Utility & service lines	electrical & phone wires, aqueducts, oil & gas pipelines, electrocution of wildlife	Cell phone and other communication towers connected by small access roads belong here. If there are small utility lines using a road right of way, they belong in 4.1 Roads & Railroads. Oil spills from pipelines should go in 9.2 Industrial & Military Effluents.
Transportation & Service Corridors	4.3	A	Shipping lanes	dredging, canals, shipping lanes, ships running into whales, wakes from cargo ships	Alteration of the natural course of a river or stream by removing rock, dirt, gravel, and other sediments from shorelines and bottoms. Such alteration is done primarily for navigation and flood control purposes.
Biological Resource Use	5.1	A	Hunting & collecting terrestrial animals	bushmeat hunting, trophy hunting, fur trapping, insect collecting, honey or bird nest hunting, predator control, pest control, persecution	This category focuses on animals that primarily live in a terrestrial environment. There are obviously some species that live on the terrestrial/ aquatic boundary. Hunting otters, beavers, amphibians, polar bears, penguins, waterfowl, and sea birds should (somewhat arbitrarily) go here. Hunting seals, whales and other marine mammals, and freshwater and marine turtles go in 5.4 Fishing & Harvesting Aquatic Resources. Yes, most people "gather" honey, eggs, insects or other slow moving targets, rather than "hunt" them. But it seems cleaner to keep all animal products as being hunted.
Biological Resource Use	5.2	A	Gathering terrestrial plants*	wild mushrooms, forage for stall fed animals, orchids, rattan, control of host plants to combat timber diseases	This category focuses on plants, mushrooms, and other non-animal terrestrial species except trees which are treated in 5.3 Logging & Wood Harvesting.
Biological Resource Use	5.3	A	Logging & wood harvesting	clear cutting of hardwoods, selective commercial logging of ironwood, pulp operations, fuel wood collection, charcoal production	Felling trees to clear agricultural land goes in the appropriate category in 2. Agriculture & Aquaculture. If it is a few timber species that are planted on a rotation cycle, it belongs in 2.2 Wood & Pulp Plantations. If it is multiple species or enrichment plantings in a quasi-natural system, it belongs here.

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Biological Resource Use	5.4	A	Fishing & harvesting aquatic resources	trawling, blast fishing, spear fishing, shellfish harvesting, whaling, seal hunting, turtle egg collection, live coral collection, seaweed collection	Increased mortality due to legal taking or killing of species for commercial purposes such as: pet trade, live bait, mussel collection for pearl industry, fur trade, smelt production, etc.
Human Intrusions & Disturbance	6.1	A	Recreational activities - non-vehicular	off-road vehicles, motorboats, jet-skis, snowmobiles, ultralight planes, dive boats, whale watching, mountain bikes, hikers, birdwatchers, skiers, pets in recreational areas, temporary campsites, caving, rock-climbing	Destruction and degradation of habitats and increased mortality of species due to excessive levels of recreational activities or inappropriate usage of habitats for recreation.
Human Intrusions & Disturbance	6.1	B	Recreational activities - vehicular	off-road vehicles, motorboats, jet-skis, snowmobiles, ultralight planes, dive boats, whale watching, mountain bikes, hikers, birdwatchers, skiers, pets in recreational areas, temporary campsites, caving, rock-climbing	Destruction and degradation of habitats and increased mortality of species due to excessive levels of recreational vehicle traffic or inappropriate usage of habitats for recreational vehicles.
Natural System Modifications	7.1	A	Fire & Fire suppression	fire suppression to protect homes, inappropriate fire management, escaped agricultural fires, arson, campfires, fires for hunting	Degradation of fire-dependent natural systems due to either human suppression of fire or the conditions needed to support combustion.

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Natural System Modifications	7.2	A	Dams & water management/use - Channelization of rivers/streams	dam construction, dam operations, sediment control, change in salt regime, wetland filling for mosquito control, levees and dikes, surface water diversion, groundwater pumping, channelization, artificial lakes	Alteration of the natural course of a river or stream by removing rock, dirt, gravel, and other sediments from shorelines and bottoms. Such alteration is done primarily for navigation and flood control purposes. This category focuses on the human activities that lead to either not enough water or too much water in the ecosystem in question. Note that homogenizing flows to a constant level may be outside the "natural range of variation." Dredging belongs in 4.3 Shipping Lanes.
Natural System Modifications	7.2	B	Dams & water management/use - Construction of dams/ impoundments	dam construction, dam operations, sediment control, change in salt regime, wetland filling for mosquito control, levees and dikes, surface water diversion, groundwater pumping, channelization, artificial lakes	Disruption and degradation of the natural flow of a river or stream due to construction of dams or impoundments. Also includes destruction of terrestrial habitats due to removal and inundation of vegetation along shorelines.
Natural System Modifications	7.2	C	Dams & water management/use - Construction of ditches/dikes/ drainage/diversion systems	dam construction, dam operations, sediment control, change in salt regime, wetland filling for mosquito control, levees and dikes, surface water diversion, groundwater pumping, channelization, artificial lakes	Disruption and degradation of the natural hydrologic patterns of wetlands, rivers, and streams due to construction of various water diversionary or containment structures.

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Natural System Modifications	7.2	D	Dams & water management/use - Excessive groundwater withdrawal	dam construction, dam operations, sediment control, change in salt regime, wetland filling for mosquito control, levees and dikes, surface water diversion, groundwater pumping, channelization, artificial lakes	Removal of groundwater resources essential to maintenance of hydrologic levels that support aquatic and subterranean species. Withdrawal is primarily from wells drilled for home water supply, irrigation, and other agricultural uses.
Natural System Modifications	7.2	E	Dams & water management/use - Excessive surface water withdrawal	dam construction, dam operations, sediment control, change in salt regime, wetland filling for mosquito control, levees and dikes, surface water diversion, groundwater pumping, channelization, artificial lakes	Removal of surfacewater resources needed to maintain hydrologic levels for aquatic and subterranean species.
Natural System Modifications	7.2	F	Dams & water management/use - Operation of dams/ reservoirs	dam construction, dam operations, sediment control, change in salt regime, wetland filling for mosquito control, levees and dikes, surface water diversion, groundwater pumping, channelization, artificial lakes	Degradation of water quality and aquatic habitat availability due to disruption of natural hydrologic regimes of rivers and streams by dams or reservoirs. Also, includes destruction / degradation of terrestrial habitats due to periodic raising or lower of water levels.

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Natural System Modifications	7.2	G	Dams & water management/use - Operation of drainage/diversion systems	dam construction, dam operations, sediment control, change in salt regime, wetland filling for mosquito control, levees and dikes, surface water diversion, groundwater pumping, channelization, artificial lakes	Degradation of water quality and habitat availability due to disruption of natural hydrologic regimes of rivers, streams, & wetlands by the operation of drainage ditches, dikes, and other water diversionary & containment structures.
Natural System Modifications	7.3	A	Other ecosystem modifications - Incompatible species management practices	land reclamation projects, rip-rap along shoreline, mowing grass, tree thinning in parks, beach construction, removal of snags from streams	Increased mortality or degradation of habitats resulting from the application of management practices that conflict with the ecological needs of a particular species.
Natural System Modifications	7.3	B	Other ecosystem modifications - Shoreline stabilization	land reclamation projects, rip-rap along shoreline, mowing grass, tree thinning in parks, beach construction, removal of snags from streams	Degradation of water quality and destruction of habitats along shorelines during stabilization activities that cover stream banks with rock or other erosion- control structures (e.g. rip rap).
Natural System Modifications	7.4	A	Removing/Reducing Human Maintenance	lack of mowing of meadows, reduction in controlled burns, lack of indigenous management of key ecosystems, ceasing supplimental feeding of condors	Many ecosystems and species depend on human maintenance to mimic natural conditions and maintain key attributes. This threat captures the loss of these direct maintenance regimes. Caution should be used in applying this category – it is not meant as a catch-all for a lack of conservation action at a site, but rather refers to instances where a historical action is no longer possible due to, for example, funding, institutional constraints, or actors being disempowered. This category does not include less direct maintenance actions, such as lack of outreach or lack of adequate policy.
Invasive & Problematic Species, Pathogens & Genes	8.1	A	Invasive non-native/ alien species plants & animals	feral horses, feral household pets, zebra mussels, Miconia tree, introduction of species for biocontrol	Increased mortality or habitat degradation caused by excessive competition or predation from invasive exotic species.

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Invasive & Problematic Species, Pathogens & Genes	8.2	A	Problematic native plants & animals	overabundant native deer, overabundant algae due to loss of native grazing fish, plague affecting rodents, invasive grasses	Increased mortality of animals resulting from either excessive take by predators or by the inability to compete with other species for food and resources.
Invasive & Problematic Species, Pathogens & Genes	8.4	A	Pathogens & Microbes	plague affecting rodents, Dutch elm disease or chestnut blight, Chytrid fungus affecting amphibians outside of Africa	Increased mortality of species due to high levels of parasites or disease-causing pathogens.
Pollution	9.1	A	Household sewage & urban wastewater - Municipal wastewater treatment/stormwater runoff	discharge from municipal waste treatment plants, leaking septic systems, untreated sewage, outhouses, oil or sediment from roads, fertilizers and pesticides from lawns and golf-courses, road salt	Degradation of water quality resulting from ineffective treatment of municipal wastewater released into rivers and streams. Also, includes ineffective capture and treatment of stormwater runoff which is often contaminated by various pollutants.
Pollution	9.1	B	Household sewage & urban waste water - Residential sewage/ septic systems	discharge from municipal waste treatment plants, leaking septic systems, untreated sewage, outhouses, oil or sediment from roads, fertilizers and pesticides from lawns and golf-courses, road salt	Degradation of water quality resulting from ineffective treatment of residential sewage by septic systems. Often caused by older, defective sewage systems or by poorly-sited septic tanks.

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Pollution	9.2	A	Industrial & military effluents	toxic chemicals from factories, illegal dumping of chemicals, mine tailings, arsenic from gold mining, leakage from fuel tanks, PCBs in river sediments	Increased mortality or degradation of habitats resulting from legal or illegal releases of toxins or contaminants into the environment by various industries.
Pollution	9.3	A	Agriculture & forestry effluents - Incompatible animal production practices	nutrient loading from fertilizer run-off, herbicide run-off, manure from feedlots, nutrients from aquaculture, soil erosion	Degradation of soil & water quality via improper management of animal waste or chemical applications required during the rearing of livestock or other farm animals raised in concentrated conditions. Wind erosion of agricultural sediments or smoke from forest fires goes in 9.5 Air-Borne Pollutants.
Pollution	9.3	B	Agriculture & forestry effluents - Incompatible Forestry Practices	nutrient loading from fertilizer run-off, herbicide run-off, manure from feedlots, nutrients from aquaculture, soil erosion	Modification of the forest composition or type of an area related to silvicultural (in)activities not compatible with species or habitat.
Pollution	9.3	C	Agriculture & forestry effluents - Incompatible grazing/ pasture management practices	nutrient loading from fertilizer run-off, herbicide run-off, manure from feedlots, nutrients from aquaculture, soil erosion	Degradation of soil & water quality and habitat structure of an area due to excessive grazing or to Inappropriate exclusion of cattle from stream and forest resources. Also, includes degradation caused by overapplication of fertilizers or other chemicals during pasture management practices.
Pollution	9.3	D	Agriculture & forestry effluents -Incompatible row crop agricultural practices	nutrient loading from fertilizer run-off, herbicide run-off, manure from feedlots, nutrients from aquaculture, soil erosion	Degradation of soil - water quality or habitat structure related to row crop production and maintenance not compatible with species needs. Often due to erosion from plowing/tilling or chemical applications of herbicides/ pesticides.
Pollution	9.4	A	Garbage & solid waste	municipal waste, litter from cars, flotsam & jetsam from recreational boats, waste that entangles wildlife, construction debris	Increased mortality or degradation of habitats due to illegal disposal of waste products containing pollutants harmful to animals. This category generally is for solid waste outside of designated landfills - landfills themselves should go in 1.2 Commercial & Industrial Areas. Likewise, toxins leaching from solid waste - for example, mercury leaking out of a landfill into groundwater - should go in 9.2 Industrial & Military Effluents.

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Pollution	9.5	A	Air-borne pollutants - Acid rain	acid rain, smog from vehicle emissions, excess nitrogen deposition, radioactive fallout, wind dispersion of pollutants or sediments from farm fields, smoke from forest fires or wood stoves	Destruction or degradation of terrestrial & aquatic habitat from precipitation in the low pH range (acid). Acid rain results from emissions of various pollutants by powerplants, factories, automobiles, and other sources. It may be difficult to determine the sources of many atmospheric pollutants – and thus hard to take action to counter them.
Pollution	9.5	B	Air-borne pollutants - Low-level ozone air pollution	acid rain, smog from vehicle emissions, excess nitrogen deposition, radioactive fallout, wind dispersion of pollutants or sediments from farm fields, smoke from forest fires or wood stoves	These inputs of energy can have strong effects on some species or ecosystems.
11. Climate Change	11.1	A	Ecosystem Encroachment	sea level rise (inundation of shoreline ecosystems, drowning of coral reefs), desertification (sand dune encroachment)	Large-scale effects of ecosystems shifting and impinging on other species and ecosystems.
11. Climate Change	11.3	A	Changes in Temperature Regimes	heat waves, cold spells, oceanic temperature changes, melting of glaciers/sea ice	Broad-scale changes in temperature mean, variability, seasonality and extremes, including changes in temperature extremes, increased average summer temperature, and decreased minimum winter/spring temperature
11. Climate Change	11.4	A	Changes in Precipitation & Hydrological Regimes	droughts, changes in timing of rains, loss of snowcover, increased severity of floods	Broad-scale changes in precipitation mean, variability, seasonality, and extremes, including decreased or increased precipitation, changes in timing of precipitation, changes in form of precipitation (eg snow vs rain; snowcover and snowpack where applicable), changes in evapotranspiration rates and hydrological cycles, and droughts and floods
11. Climate Change	11.5	A	Severe / Extreme Weather Events	thunderstorms, tropical storms, hurricanes, cyclones, tornadoes, hailstorms, ice storms or blizzards, dust storms, erosion of beaches during storms	Changes in frequency, timing and/or intensity of storms as well as severe weather events that threaten targets that have lost resilience Category Examples: thunderstorms, tropical storms, hurricanes, cyclones, tornadoes, hailstorms, ice storms or blizzards, dust storms, erosion of beaches during storms