

**ILLINOIS RIVER BASIN RESTORATION
COMPREHENSIVE PLAN
WITH INTEGRATED ENVIRONMENTAL ASSESSMENT**

GLOSSARY

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abiotic: non-living; as applied to the physical and chemical components of the ecosystem

adaptive management: an approach to natural resources management that acknowledges the risk and uncertainty of ecosystem restoration and allows for modification of restoration measures to optimize performance. The process of implementing policy decisions as scientifically driven management experiments that test predictions and assumptions in management plans, and using the resulting information to improve the plans. A mechanism for integrating scientific knowledge and experience for the purpose of understanding and managing natural systems. Adaptive management is a continuous, iterative process by which the consequences of management actions and policies are systematically evaluated, and the actions and policies modified in response to the resulting new information.

anthropogenic: caused by humans

area of potential effect: the geographic area or areas within which an undertaking or activity may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist

backwater: small, generally shallow body of water attached to the main channel, with little or no current of its own; shallow, slow-moving water associated with a river but outside the river's main channel

base flow: stream flow originating entirely from groundwater discharging to the stream

basin: the entire geographical area drained by a river and its tributaries, such as the Illinois River basin

bathymetry: the measurement of water depth across a water body

bed material load: sediment that is generally transported by being rolled or pushed along the bottom of a stream by moving water. Portions of the bed material load may become periodically entrained into the flow by turbulence

benthic: refers to the bottom layer of any body of water and the organisms therein

biodiversity: the variety of living organisms considered at all levels of organization, from genetics through species, to higher taxonomic levels, and including the variety of habitats and ecosystems, as well as the process occurring therein. Biodiversity occurs at four levels: genetic diversity, species richness, ecosystem diversity, and landscape diversity.

biotic: living; as applied to the components of an ecosystem

catchment: watershed; the area drained by a stream, lake, or other body of water. Frequently used to refer to areas that feed into dams; may also refer to areas served by a sewerage or stormwater system

channel training structure: a man-made flow obstruction (e.g., wing dam, closing dam or revetment) used to divert river flow to a desired location, usually toward the center of the main channel to increase flow and limit sedimentation or to protect the riverbank from eroding

community: a grouping of populations of different species found living together in a particular environment

conceptual model: a conceptual model in problem formulation is a written description and visual representation of predicted relationships between ecological entities and the stressors to which they may be exposed

conservation: active management to ensure the survival of the maximum diversity of species, and the maintenance of genetic diversity within species; implies the maintenance of ecosystem functions; embraces the concept of long-term sustainability; a careful preservation and protection of something; especially planned management of a natural resource to prevent exploitation, destruction, or neglect

corridor: a relatively narrow strip of habitat that crosses an area of non-habitat land and serves to connect larger areas of habitat

cumulative effects: effects on the environment that result from the incremental impact of any action when added to other past, present or future actions, regardless of which agency or person undertakes such actions

desired future conditions: a description of management goals for an area to achieve optimal conditions; the descriptions should be constructed with the input of all interested parties in the region and should include clear goals for species, communities, and ecosystem composition, structure, and functions across the landscape. For this system study, the desired future condition was based on coordination with resource managers and became the system objectives.

disturbance regime: the spatial and temporal characteristics of disturbances affecting a particular landscape over a particular time (e.g., fire, flood, drought). Any relatively discrete event in time that disrupts the ecosystem, community or population structure and changes resources or the physical environment

drawdown: lowering the level of water in a selected portion of an aquatic system; conducted for habitat management purposes with dams or pumps

ecological (or biological) integrity: a system's wholeness or "health," including presence of all appropriate elements, biotic and abiotic, and occurrence of all processes that generate and maintain those elements at the appropriate rates. The capability of supporting and maintaining a balanced, integrated, adaptive community of organisms having a species composition, diversity, and a functional organization comparable to that of natural, unimpacted habitat of the region

ecological processes: the diversity and complexity of ecosystems seem to depend on a small set of biotic and abiotic, or physical processes, each operating over different scale ranges; the dynamic biological, geological, and chemical interactions that occur among and between the biotic and abiotic components in an ecosystem

ecological restoration: an intentional activity that initiates or accelerates the recovery of an ecosystem with respect to its health, integrity, and sustainability. The ecosystem that requires

restoration has been degraded, damaged, transformed or entirely destroyed as the direct or indirect result of human activity. Restoration attempts to return an ecosystem to its historic trajectory.

ecological stressor: A substance or action that has the potential to cause an adverse effect on an ecosystem

ecosystem: dynamic and interrelating complex of plant and animal communities and their associated nonliving environment; a biological community together with the physical and chemical environment with which it interacts

ecosystem function: processes that drive the ecosystem; any performance attribute or rate function at some level of biological organization (e.g., energy flow, sedimentation, detritus processing, nutrient spiraling)

ecosystem health: a condition when a system's inherent potential is realized, its condition is stable, its capacity for self-repair, when perturbed, is preserved, and minimal external support for management is needed

ecosystem management: protecting, conserving or restoring the function, structure, and species composition of an ecosystem, recognizing that all components are interrelated

ecosystem processes: the aggregate of all interactions among the various biotic components of an ecosystem (e.g., migration, pollination, predation), between the abiotic and biotic components of an ecosystem (e.g., nutrient uptake, erosion, respiration) and natural events and cycles (e.g., fire regimes, hydrologic cycles)

ecosystem restoration: management actions that attempt to accomplish a return of natural areas or ecosystems to a close approximation of their conditions prior to human disturbance, or to less degraded, more natural conditions in terms of structure and function

ecosystem services: all of the goods and services provided to humanity by natural ecosystems; examples include wood products, fertile soils, genetic variation, clean water, and clean air

ecotype: populations adapted to a particular set of environmental conditions; a collection of plants that evolved in response to the specific local environment of an area; a population adapted to a restricted habitat as a result of natural selection within a local environment

edge (or ecotone): the abutment of distinctive vegetation types

enhancement: in the context of restoration ecology, any improvement of a structural or functional attribute

environmental assessment: a document prepared to describe the effects for proposed activities on the environment, in compliance with the National Environmental Policy Act (NEPA) of 1969, as amended

environmental sustainability: the ability of aquatic, wetland, and terrestrial complexes to maintain themselves as self-regulating, functioning systems

Federal Principals Task Force: in conjunction with the Upper Mississippi River-Illinois Waterway System Navigation Feasibility Study, a collaborative and collegial forum for advising the Corps on how to address the National Research Council (NRC) recommendations and other key issues, provided national level balance and guidance on important economic and environmental issues related to the NRC recommendations; made up of senior members of the Department of Interior, Department of Agriculture, Department of Transportation, and Environmental Protection Agency

fish passage: modification or removal of man-made barriers that would otherwise restrict or prevent movement or migration of fish

floodplain: lowlands bordering a river that are subject to flooding, thereby providing flood storage. Floodplains are composed of sediments carried by rivers and deposited on land during flooding and contain a mosaic of habitat types.

funerary object: of, relating to, or for a funeral or burial; an object discovered in close proximity to human remains and interred with the remains

Geographic Information Systems (GIS): a set of computer hardware and software for analyzing and displaying spatially referenced features, such as points, lines or polygons, with non-geographic attributes, such as species, age, etc. utilized for mapping and analysis

geomorphology: the science that deals with land and submerged relief features (landforms) of the earth's surface; the physical structure of the river floodplain environment

habitat: the living place of an organism or community, characterized by its physical or biotic properties; habitats can be described on many scales from microhabitat to ecosystems to biomes

habitat fragmentation: the process whereby a larger, continuous area is both reduced in area and divided into two or more pieces; the disruption of extensive habitats into isolated and small patches; Fragmentation has three negative components: loss of total habitat area and smaller, more isolated remaining habitat patches, and increased potential for edge effects.

historic property: any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places; includes artifacts, records, and remains that are related to and located within such properties

hydrologic: pertaining to the cyclic phenomena of waters of the earth; successively as precipitation, runoff, storage and evaporation, and quantitatively as to distribution and concentration

hydrology: a science dealing with the properties, distribution, and circulation of water on the surface of the land, in the soil and underlying rocks, and in the atmosphere

hypoxia: the condition in which dissolved oxygen concentrations are less than two parts per million of water (e.g., zones in the Gulf of Mexico and other estuaries)

impoundment: the volume of standing water that is maintained behind a dam

Index of Biotic Integrity (IBI): The IBI utilizes numerous metrics or measures (often between 10 and 15) to assess aquatic biological integrity using fish community or macroinvertebrate community sampling. There are three broad categories under which the metrics fall: species composition; trophic composition; and fish abundance, condition, and tolerance to stressors

indicator: a measurable surrogate for environmental end points, such as biodiversity, that are assumed to be of value to the public; sensitive to changes in the environment can warn that environmental changes are taking place

invasive species: any species that has the tendency to invade or enter a new location or niche; an introduced species that out competes native species for space and resources; an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health

keystone species: a species whose presence is crucial in maintaining organization and diversity in their communities and who are much more important than the abundance of the species would suggest

landscape: a heterogeneous land area composed of interacting ecosystems that are repeated in similar form throughout; landscapes are variable in size; usually overlaps governmental jurisdictions, thus requiring collaboration from a broad range of participants

landscape ecology: the study of the structure, function, and change in a heterogeneous land area composed on interacting ecosystems

lateral connectivity: the connection of a river and its floodplain, allowing access across aquatic and terrestrial habitats by organisms as well as flood waters

lentic: of, or relating to, or living in still water, such as a pond or lake

levee district: cooperative quasi-governmental organizations that protect areas from floodwaters, primarily for agricultural areas, but may also serve as wildlife areas

levee setback: the process of moving levees away from the riverbank to increase floodplain connectivity, allow for restoration of the riparian corridor, and increase floodwater storage and conveyance capabilities in a river system

life history: an organism's patterns of growth, reproduction, and longevity that are related to specific demands for survival in a particular place at a particular time

limiting factor: the ecologic influence that limits or controls the abundance and/or distribution of a species

litter: an accumulation of dead plant materials on the soil surface

longitudinal connectivity: allows for the upstream and downstream movement and/or migration of aquatic organisms; increases opportunities for aquatic organisms to utilize and move between exiting stream environments, colonize new habitats, or recolonize aquatic habitats following local extinctions

lotic: of, or relating to, or living in flowing water, such as a river or stream

macroinvertebrates: small, but visible with the naked eye, animals without backbones (insects, worms, larvae, etc); water bodies have communities of aquatic macroinvertebrates. The species composition, species diversity and abundance of the macroinvertebrates in a given water body can provide valuable information on the relative health and water quality of a waterway.

management action: a structural or non-structural measure that modifies or adjusts the condition of the ecosystem

mitigation: actions taken to avoid, reduce, or compensate for the effects of environmental damage; among the broad spectrum of possible actions are those that restore, enhance, create, or replace damaged ecosystems

moist soil unit: an area where water levels are controlled to provide a desired mix of moist soil vegetation, generally for use by waterfowl

monoculture: a simplified biotic community dominated by one species

naturalization: establishing a sustainable, varied, yet stable natural area or system that is capable of supporting a healthy, biologically diverse ecosystem within the context of the developed landscape . When abiotic and biotic barriers to survival are surmounted and when various barriers to reproduction are overcome

non-native species: species of plants and animals that are imported or unintentionally transported to a new location where they do not naturally occur

non-point source pollution: water pollution produced by diffuse watershed land-use activities

open river condition: the condition when all dam gates are out of the water and the river water level is no longer controlled by a navigation dam; a condition that minimizes obstructions to fish migration

operation and maintenance (O&M): activities and costs associated with managing and maintaining an area or structure; includes funding for personnel, minor repairs, and supplies

patch: a nonlinear surface area that differs in appearance from its surroundings; the term used for distinct areas, such as ecosystems, on a landscape

performance measures: metrics or indicators that are related to an ecosystem process or function and which are measurable in a natural ecosystem that can be used to judge the performance of restoration actions

planform: the shape or form of an object, as seen from above, as in a plan view

point source pollution: pollution into bodies of water from specific discharge points such as sewer outfalls or industrial-waste pipes

pool: the area of water that is impounded and maintained at a higher level behind a navigation dam; generally refers to the entire length of river between sequential dams

pool reach: a portion of a pool between navigation dams

population: a group of individuals of the same species occupying an area small enough to permit interbreeding among all members of the group

prairie: an area of land of low topographic relief that principally supports grasses and herbs, with few trees, and is generally of a mesic (moderate) climate. Most of the Great Plains, most of Ohio, Indiana, Illinois and Iowa, and much of Missouri and Minnesota, is considered prairie. Almost all of this area has been converted into farmland. Fire is an important part of prairie ecology; naturally-occurring and human-induced fires were common in historic prairie areas. Grazing by animals such as the American Bison and Prairie dogs also helped maintain the original prairie environment

preservation: keeping safe from injury, harm, or destruction

pre-settlement: a condition or state prior to European intervention

reach: a continuous stretch or expanse. In reference to rivers, it can be used to define portions of rivers at different scales (i.e. pool reach, reach between two river bends)

reference condition: the range of factors (e.g., hydrology, sediment movement, animal and plant communities, and channel geometry) that is representative of an area or ecosystem prior to significant alteration of its environment

region: a large geographical area that is distinguished by certain characteristics (e.g., biological, ecological, social, political, economic)

rehabilitation: improvements to a natural resource; putting back into good condition or working order

resilience: the ability of a system to maintain its structure and patterns of disturbance in the face of disturbance; pertaining to the boundaries of stable behavior, events far from equilibrium, high variability, and adaptation to change

restoration: reestablishing degraded ecosystem structure, function, and dynamic processes to a less degraded, more natural condition (ER 1105-2-100). As defined under Section 519, in its broadest usage, restoration encompasses the following concepts: conservation, enhancement, naturalization, preservation, protection, rehabilitation, restoration, and stabilization

riparian: areas that are contiguous to and affected by surface and subsurface hydrologic features of perennial or intermittent water bodies (e.g., rivers, streams, lakes, or drainage ways); pertaining to the boundary between water and land; normally represents the streamside zone and the area of influence of the stream

river stage: the elevation of the water surface (usually in feet) above an arbitrary datum

savanna: area with a well-developed herbaceous ground cover composed principally of prairie species with scattered trees at densities ranging from 1 per acre to roughly 50% canopy closures. The frequency of fire maintains this habitat type by influencing the amount and density of woody vegetation encroaching into the prairie environment.

sediment resuspension: the movement of sediment from the river bed into the water column due to a disturbance (e.g., wave action).

sediment transport: the movement of sediment (usually by water).

sedimentation: the process of sediment being deposited in a given location.

side channel: aquatic channel connected to the main channel and separated from the main channel by an island; usually has flowing water.

spatial: of, relating to, involving, or having the nature of space.

species: one or more populations of individuals that can interbreed, but cannot successfully breed with other organisms.

species diversity: the richness, abundance, and variability of plant and animal species and communities.

species evenness: a measure of diversity that quantifies unequal species representation in a community against a hypothetical community in which all species are equally common; the degree of heterogeneity in the spatial distribution of species in a community or ecosystem.

species richness: a simple count of the number of species in an area.

stability: the propensity of a system to attain or retain an equilibrium condition of steady state or stable oscillation; having a resistance to departure from that equilibrium condition, and if perturbed, returning rapidly to that equilibrium condition.

stabilization: protect from further degradation; restore the original condition when disturbed from a condition of equilibrium or steady motion.

stakeholder: those organizations and/or individuals having a vested interest in the outcome of a decision making process.

structure: the horizontal and vertical spatial arrangement, or configuration, of a habitat, community or ecosystem; includes biotic and abiotic diversity.

sub-basin: a subdivision of a basin, based on hydrology. Nineteen major sub-basins have been delineated in the Illinois River Basin: Chicago, Des Plaines, Spoon, Upper Sangamon, South Fork Sangamon, Lower Sangamon, Salt Creek, LaMoine, Lower Illinois, Lower Illinois: Lake Chautauqua, Lower Illinois: Lake Senachwine, Macoupin, Upper Fox, Lower Fox, Upper Illinois, Kankakee, Iroquois, Vermilion and Mackinaw.

subwatershed: a subdivision of a watershed, based on hydrology, generally corresponding to the area drained by a small tributary or stream, as opposed to a major river. The Illinois River basin contains approximately 305 subwatersheds

succession: sequential change in the vegetation at a particular location over time

sustainable/sustainability: a level and method of resource use that does not destroy the health and integrity of the systems that provide the resource; thus the long-term resource availability does not ever diminish due to such use

temporal: of, relating to, or limited by time

thalweg: the line defining the lowest points along the length of a riverbed or valley

threat assessment: the identification, evaluation, and ranking of stresses and sources of stress to populations, species, ecological communities or ecosystems at a site or within a landscape

threatened and endangered species: those species that are listed as threatened or endangered under the federal endangered species act (ESA) of 1973, and those species that are candidates or proposed as candidates for listing under the ESA; listing can occur at the federal or state level or both

threshold: the level (duration or intensity) of a stimulus required to produce an effect

total maximum daily load (TMDL): a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources

tributary: a stream or river whose water flows into a larger stream or river

tributary, major: the larger rivers or streams flowing directly into a larger river. There are 10 major tributaries of the Illinois River Basin. They are the: Chicago, Des Plaines, Spoon, Sangamon, LaMoine, Fox, Kankakee, Vermilion, and Mackinaw Rivers and Macoupin Creek

trust species: USFWS trust species include migratory birds, anadromous and interjurisdictional fish, and endangered species

turbidity: Measure of the "lack of clearness" of water; an expression of the optical property that causes light to be scattered and absorbed rather than transmitted in straight lines through a sample; the measure of relative sample clarity

watershed: the geographic area that naturally drains into a given watercourse such as a stream or river

wicket gate: a rectangular heavily constructed slab of wood and steel hinged in a counterbalanced way so as to be lying flat on the river bed when down, and, when raised, will be held upright by the pressure of the water. Wicket gates are placed in a parallel line across the river and when all are in raised position they form a wall or dam, thus backing up the water and raising it to the pool level. On the Illinois River, located at Peoria and La Grange Lock and Dams