Appendix A: Complete list of Habitat definitions

Agriculture: Lands devoted to commodity production, including intensively managed nonnative grasses, row crops, fruit and nut-bearing trees.

2) Aquatic systems,
This habitat is comprised of all water, both flowing and stationary, habitats in Indiana.

Lake Michigan

Lake Michigan is Indiana's largest natural lake, although Indiana can only lay claim to about 1% (224 mi^2) of its area and only 45 miles of its shoreline. The southern tip of Lake Michigan forms Indiana's extreme northwest border. Ecology of the lake is ruled by the massive amount of offshore, deep, cold water, wind seiches, and newly introduced exotic species.

Rivers and Streams by Order and Watershed

A. Great Lakes drainage (includes Lake Michigan and Lake Erie tributaries)
1). headwater (< 20 mi^2 drainage area) The Great Lakes drainage of Indiana includes waters that flow into Lake Michigan and Lake Erie and are located in extreme northern Indiana and northeast Indiana. Headwater streams are those having a drainage area of < 20 mi^2. Headwater streams of the Great Lakes drainage of Indiana are of low to medium gradient, with sandy/rocky bottoms and are highly associated with the extensive natural lakes and wetlands of the region. Many have been channelized and highly modified for drainage to maintain agricultural lands.

2). wadeable/large river (> 19 < 2,000 mi^2) The Great Lakes drainage of Indiana includes waters that flow into Lake Michigan and Lake Erie and are located in extreme northern Indiana and northeast Indiana. Wadeable/large rivers are those having a drainage area of > 19 < 2,000 mi^2. Wadeable rivers and streams of the Great Lakes drainage of Indiana are of low to medium gradient, with sandy/rocky bottoms and are highly associated with the extensive natural lakes and wetlands of the region.

3). great river (> 1,999 mi^2); this includes all of the St. Joseph River in St. Joseph and Elkhart counties, and the lower section of the Maumee River in Allen County The Great Lakes drainage of Indiana includes waters that flow into Lake Michigan and Lake Erie and are located in extreme northern Indiana and northeast Indiana. Great rivers are those having a drainage area of > 1,999 mi^2. This includes all of the St. Joseph River in St. Joseph and Elkhart counties (Lake Michigan drainage), and the lower section of the Maumee River in Allen County (Lake Erie drainage). Great Rivers of the Great Lakes drainage of Indiana are of low to medium gradient and characterized by sandy/rocky bottoms.

B. Kankakee River (Illinois River) drainage
1). headwater (< 20 mi^2 drainage area) Rivers and streams of the Kankakee River (Illinois River) drainage are those found in northwest Indiana that flow west into Illinois and eventually the Illinois River. Headwater streams are those having a drainage area of < 20 mi^2. Headwater streams of the Kankakee River drainage are

now highly modified, often manmade, sandy/muck bottom, channelized ditches, maintained to drain agricultural lands and control flooding.

2). wadeable/large river (> 19 < 2,000 mi^2) Rivers and streams of the Kankakee River (Illinois River) drainage are those found in northwest Indiana that flow west into Illinois and eventually the Illinois River. Wadeable/large rivers are those having a drainage area of > 19 < 2,000 mi^2. Once a series of meandering streams through a huge wetland complex, most of the rivers and streams of the Kankakee River drainage are now highly modified, sandy/muck bottom, channelized ditches, maintained to drain agricultural lands and control flooding.

C. Ohio River drainage

1). great river (> 1,999 mi^2); this includes the Ohio River, the Wabash River upstream to the Mississinewa River, the White River upstream on the West Fork to the Johnson/Morgan county line and on the East Fork to just south of Columbus (Bartholomew County) Rivers and streams of the Ohio River drainage include all waters of the lower half of Indiana and a large portion of the northern half of Indiana. Great rivers are those having a drainage area of > 1,999 mi^2. This includes the Ohio River, the Wabash River upstream to the Mississinewa River, the White River upstream on the West Fork to the Johnson/Morgan county line and on the East Fork to just south of Columbus (Bartholomew County). The entire Ohio River drainage of Indiana culminates where the Wabash River meets the Ohio River in the extreme southwestern tip of Indiana.

2). eastern corn belt/interior plateau ecoregions

a. headwater (< 20 mi^2 drainage area) Streams of the Ohio River drainage, Eastern Corn Belt ecoregion are found in central and east-central Indiana; Interior Plateau ecoregion streams are found in south-central and southeastern Indiana. Headwater streams are those having a drainage area of < 20 mi^2. Many headwater streams of the Eastern Corn Belt ecoregion are constructed drainage ditches or channelized streams and are intermittent. The Interior Plateau ecoregion includes Indiana's karst region and the most rugged terrain of Indiana.

b. wadeable/large river (> 19 < 2,000 mi^2)

Streams of the Ohio River drainage, Eastern Corn Belt ecoregion are found in central and east-central Indiana; Interior Plateau ecoregion streams are found in south-central and southeastern Indiana. Wadeable/large rivers are those having a drainage area of > 19 < 2,000 mi^2. The streams of the Eastern Corn Belt ecoregion are highly influenced by the extensive agriculture that dominates the ecoregion. The Interior Plateau ecoregion includes Indiana's karst region and the most rugged terrain of Indiana.

3). interior river lowland

a. headwater (< 20 mi^2 drainage area) Streams of the Ohio River drainage, Interior River Lowland ecoregion are found in southwestern Indiana. Headwater streams are those having a drainage area of < 20 mi^2. Headwater streams of the Interior

River Lowland have been heavily modified for agricultural purposes and many are intermittent.

b. wadeable/large river (> 19 < 2,000 mi^2) Streams of the Ohio River drainage, Interior River Lowland ecoregion are found in southwestern Indiana. Wadeable/large rivers are those having a drainage area of > 19 < 2,000 mi^2. Streams of the Interior River Lowland ecoregion are heavily impacted by the low, nearly level flood plains associated with the great rivers of the region.

Oxbows/Backwaters/Sloughs/Embayments
The oxbows/backwaters/sloughs/embayments of Indiana are for the most part restricted to the southwest portion of Indiana and along the Ohio River forming Indiana's southern boundary. These habitats vary highly in their structure and permanency, and are all associated with large river habitats. They characteristically have muck bottoms and function as important nursery areas for large river fish species. Although many of these habitats are natural, others are manmade. Embayments along the Ohio River are the result of the series of locks and dams that have been created along the Ohio River. Many oxbows are the result of stream channelization.

Natural Lakes
Eighteen counties in northern Indiana contain natural lakes, although Kosciusko, Lagrange, Noble and Steuben counties contain nearly 70% of the total surface acreage. Natural lakes vary widely in habitat and eutrophication. Less fertile lakes tend to be deep and well oxygenated with marl or sandy substrates. More fertile lakes tend to be shallow with muck bottoms and dense stands of aquatic vegetation.

Impoundments
Impoundments are artificially constructed or maintained standing or flowing water bodies.

River: A broad, deep inland body of water with a steady, directional current (Kusler 1983).

Kettle Lake: Lakes formed in depressions left by the melting of large blocks of glacial ice which remained after a glacier receded (Kusler 1983).

Barren Lands: Lands dominated by exposed rock or minerals with sparse vegetation.

Barren Lands Active Quarries: Vegetative cover removed to extract mineral, stone, gravel, or sand.

Barren Lands Bare Dunes: A hill, mound or ridge of wind deposited sand (Jackson 1997).

Barren Lands Cliffs: Abrupt steep sloped exposed rock face.

Appendix A: Complete list of Habitat definitions

Barren Lands Rock Outcrops: Large rock surfaces exposed along a predominantly soil covered slope.

Developed Lands: Highly impacted lands, intensively modified to support human habitation, transportation, commerce and recreation.

Developed Lands Golf Courses: Lands intensively managed, in whole or in part, for human use relative to the game of golf.

Developed Lands Industrial Lands: Areas supporting the production of manufactured goods materials and energy, for example, steel mills, petroleum refineries and electricity generating plants.

Developed Lands Roads/Rails/Bridges: Corridors, paved strips and connecting structures for the moving of goods, services and people by cars, trucks, and trains.

Forest Lands, A plant community extending over a large area and dominated by trees, the crowns of which form an unbroken covering layer or canopy.

pre-forest- This is the initial stage as an area begins to revert from a cleared condition to forest. It is typified with annual/ perennial herbs, forbs and grasses with some shrubs and intolerant tree seedlings.

early forest- Typified by tree seedlings (less than 1" diameter breast height [dbh]) and tree saplings (greater than 1" dbh but less than 5" dbh). The tree species often occur in combination with non-arborescent woody shrubs and perennial herbs/forbs.

pole stage- Typical dominant overstory vegetation is composed of pole sized trees (greater than 5" dbh but less than 9" dbh in softwoods or 11" dbh in hardwoods). Pole Stage forests may contain a higher percentage of intolerant or midtolerant species than later developmental stages. Canopy may be partially or completely closed, but is- often at a lower height than later stages. Older forests that are heavily harvested or damaged by weather or fIre will often have a structure that resembles the Pole Stage.

mature high canopy stage- Typical dominant overstory vegetation is composed primarily of sawtimber sized trees (greater than 9" dbh in softwoods and 11" dbh in hardwoods. The forest canopy is usually higher than in previous stages and predominantly closed with occasional canopy gaps. Older forests that are selectively harvested will usually remain in the Mature/High Canopy condition after harvest while those areas that are clear cut or contain regeneration openings will revert back to the Early Forest Stage.

old forest stage – Main overstory canopy trees are relatively old and relatively large for the represented species on that site. There are a significant number of standing snags and downed logs present. More frequent and larger canopy gaps occur as older trees die and the gaps revert to the Early Forest Stage.

Appendix A: Complete list of Habitat definitions

Forests Floodplain Forests: Forests in a nearly level alluvial plain that border a river and is subject to flooding (Jackson 1997).

Forests Forested Wetlands: Forest that develops on hydric soils and supports hydrophytic trees such as willow, pin oak, sycamore and cottonwood.

Forests Riparian Wooded Corridors/Streams: Forests associated with river and stream banks. Often utilized as travel corridors by wildlife and affects in-stream habitat.

Generalist: Species not strongly associated with any particular natural habitat.

Grasslands: Open area dominated by grass species, for example, prairies or reclaimed minelands.

Grasslands Early Successional Areas: Areas maintained by natural or anthropogenic means in vegetation dominated by grasses, annual and perennial forbs with a poorly developed tree and shrub component.

Grasslands Farm Bill Programs: Grasslands developed in a predominately agricultural landscape to promote soil and water conservation and wildlife habitat values.

Grasslands Fescue: Areas dominated by nonnative, cool season fescue grasses. This intensively planted grass is one of the most common plants in Indiana and is often planted to control erosion along highways and other developed areas. Fescue is also extensively used for hay and pasture for livestock.

Grasslands Haylands: Open areas maintained in mixed grass (low fescue content) and forb covers or predominated by legumes and periodically harvested during the growing season to produce forage for livestock.

Grasslands Pasture: Open areas predominated by grass species and utilized by grazing livestock.

Grasslands Prairies: An open, usually treeless area, with its vegetation composed primarily of native grasses, forbs, and wildflowers. (Jackson 1997)

Grasslands Reclaimed Minelands: Open areas created by total soil disturbance related to surface mining activities and revegetated with warm or cool season grasses.

Grasslands Savannah: An area of predominately prairie mixed with scattered individual trees or groves of trees. Vegetation is transitional in type between grassland and forest (Jackson 1997).

Appendix A: Complete list of Habitat definitions

Grasslands Vegetated Dunes and Swales: Ridge and valley topography developed by wind blown sand deposits. These deposits are near Lake Michigan. Vegetative cover progresses the further the dunes are from the lakeshore.

Shrub/Scrub: Transitional areas of mixed vegetation (i.e., grasses, small shrubs, trees and forbs) undergoing natural succession to forest.

Subterranean Systems Cave Entrances: Surface openings of subterranean features reaching as far as natural light can penetrate (i.e., twilight zone).

Subterranean Systems Caves: Connected underground rooms and passages beyond natural light penetration.

Wetlands Emergent: Areas shallowly flooded temporarily or permanently to cover the base of plants but not prolonged inundation of the entire plant.

Wetlands Ephemeral: Areas temporarily flooded often supporting aquatic plants and animals.

Wetlands Forested: Area temporarily or permanently flooded with woody vegetation taller than 6 meters.

Wetlands Herbaceous Marsh: Usually shallow wetlands dominated by non-woody plants such as cattail, reeds or rushes.

Wetlands Mudflats: Moist nonvegetated soil, often produced in shallow wetlands by advance and retreat of water levels.

Wetlands Permanent: Areas permanently flooded and often supporting aquatic plants and animals.

Wetlands Shrub/Scrub: Area flooded temporarily or permanently with woody vegetation shorter than 6 meters.

(Wetland categories were adapted from Cowardin 1979)

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Appendix A: Complete list of Habitat definitions

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