The Middle and Lower Course: Life in the Bottomland

**Upper Course**
- **Characteristics**
  * Steep / V-shaped Valley
  * Narrow / Shallow Channel
  * High Bedload
- **Features**
  * 'V' Shaped Valleys
  * Interlocking Spurs
  * Waterfalls
  * Gorges

**Middle Course**
- **Characteristics**
  * Open / gentle sloping valley with floodplain
  * Wider / deeper Channel
  * More suspended sediment
- **Features**
  * Meanders
  * River Cliffs
  * Slip off Slopes

**Lower Course**
- **Characteristics**
  * Open / gentle sloping valley with floodplain
  * Flat & Wide Floodplain
  * Wide, open valley
  * Very wide and very deep channel
- **Features**
  * Ox-bow Lakes
  * Flood Plains
  * Levees

**Floodplain**

older river channel and floodplain sediments
A floodplain is a low-lying plain on both sides of a river that has repeatedly overflowed its banks and flooded the surrounding areas.

When the floods subside, alluvium is deposited on the floodplain.
Floodplain – Humans settle in the bottomland
Floodplains and Natural Levees

The larger suspended material, being heavier, is deposited at the river banks while the finer sediments are carried and deposited further away from the river.

The deposition at the river banks build up into embankments called levees.
Floods shape the bottomland
High-flow Channels – Flood Scars
Bottomland Ecology

Habitat Richness = High Biodiversity
Slough

Slough usually rhymes with shoe in the U.S. except in New England, where it usually rhymes with now, the preferred British pronunciation.

Slough may mean a place of deep mud or mire, a swamp, a river inlet or backwater, or a creek in a marsh or tide flat.
Oxbow Lake
Swamps
Bottomland Vegetation

Plant community structured by hydrology

Hydric Soils
<table>
<thead>
<tr>
<th>Zone</th>
<th>Aquatic ecosystem</th>
<th>Bottomland hardwood ecosystem</th>
<th>Bottomland upland transition</th>
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<tbody>
<tr>
<td>Name</td>
<td>I</td>
<td>II</td>
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<td>Open water</td>
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<td>Lower hardwood wetlands</td>
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<td>Water modifier</td>
<td>Continuously flooded</td>
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<td>Flooding frequency, % of year</td>
<td>100</td>
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<td>Flooding duration, % of growing season</td>
<td>100</td>
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<td>&gt;25</td>
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Bottomland/Floodplain Forest Vegetation

Vertical structure – groundcover, understory, canopy
Bottomland Faunal Biodiversity
# Table 1

PIF Physiographic Regions that Identify Bottomland Hardwoods and Forested Wetlands as Priority Habitats for Conservation with Associated Priority Bird Species

<table>
<thead>
<tr>
<th>PIF Priority Species</th>
<th>Subtropical Florida (01)</th>
<th>Peninsular Florida (02)</th>
<th>South Atlantic Coastal Plain (03)</th>
<th>East Gulf Coastal Plain (04)</th>
<th>Mississippi Alluvial Valley (05)</th>
<th>Coastal Prairies (06)</th>
<th>Interior Low Plateaus (18)</th>
<th>Ozarks and Ouachitas (19)</th>
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1. The “X” denotes priority species identified by PIF within each physiographic region.
2. Refers to a subspecies, Wayne’s Black-throated Green Warbler (Dendroica virens waynei), that breeds along the Atlantic coast in cypress swamps.
Eastern Arkansas could teach good tales a few things about being flat. Lying in the vast Mississippi River floodplain, the terrain on all sides stretches unimpeded to the most distant horizon. In such a bird-play, river and land must be regarded during flood season, crisscrossing the soil and running over to transform hard and salt marshes that 30 years ago surrounded Diamond Valley.

White biologists figure out how to protect the ivory-billed woodpecker, local residents are turning the endangered bird into cash.
Identifying Field Marks of an Ivory-billed Woodpecker and Similar Birds

Distinct Ivory-billed Woodpecker characteristics:
- White trailing edge of wing (vs. dark trailing edge of Pileated).
- Tail feathers longer and more pointed.
- Pale, ivory-white bill.

Distinct Pileated Woodpecker characteristics:
- White trailing edge of wing (vs. dark trailing edge of Pileated).
- Tail feathers longer and more pointed.
- Pale, ivory-white bill.

Distinct Red-headed Woodpecker characteristics:
- Female Ivory-bill crest is entirely black (female Pileated crest resembles male ivory-billed red crest with black forehead – use chin color as distinguishing feature).

Illustrations: © David Allen Sibley
Bottomland Bird – Hornsby Bend

Black-bellied Whistling Duck
Life at the River’s Edge

Riparia riparia
(Linnaeus, 1758)

Sand Martin
Bank Swallow

The Tisza River
Hungary
Case Study

The River Tisza
Hungary
Hungary = Magyarorszag

Population 9,800,000

Two Rivers – The Danube and The Tisza (largest tributary of the Danube)
Capital – Budapest

Danube River [Duna]
The Tisza River is about 600 miles long. 100 miles lie in Ukraine and Romania, 400 miles in Hungary, and 100 miles in Serbia.
Sándor Petőfi, The Tisza

Ottan némán, mozdulatlan álltam,
I stood there, silent, without stirring,
Mintha gyökeret vert volna lábam,
As if my feet were rooted to the spot,
Lelkem édes, mély mámorba szédült
My soul intoxicated by a sweet, profound ecstasy
A természet örök szépségétül.
Induced by nature's eternal beauty.
Óh természet, óh dicső természet!
Oh nature, oh glorious nature!
Mely nyelv merne versenyezni véled?
What language would dare compete with you?
Mily nagy vagy te! mentül inkább hallgatsz,
How splendid you are! the more you are silent,
Annál többet, annál szebbet mondasz.
The more you say, the more the beauty of your expression.
The Mythic River

896AD

Magyar
Tribal Leaders
Arpad
Szabolcs
The Magyar River
900 – 1526

The Kingdom of Hungary
The River of Refuge
1526 – 1687

The Ottoman Occupation
Habsburg Empire
1526-1867

Austro-Hungarian Empire
1867-1918
The Lost River – Trianon Treaty 1920
1956 Hungarian Revolution
In May 1989, the first visible cracks in the Iron Curtain appeared when Hungary began dismantling its 150 mile long border fence with Austria.

The relatively open border with the West allowed hundreds of East Germans on holiday in Hungary to escape to Austria and then travel safely to West Germany.

Hungary held its first multiparty elections in 1990 and initiated a free market economy.

It joined NATO in 1999 and the EU in 2004.
BUSH TO DISPATCH 60 PEACE CORPS VOLUNTEERS TO WORK IN HUNGARY
JULY 12, 1989

BUDAPEST, Hungary — In what was called a "historic day" for the Peace Corps, President Bush said today the agency will send 60 American volunteers to Hungary as English teachers—the first time volunteers are being assigned to a Communist nation.

It also will be the first time that volunteers are sent to Europe.

"The teaching of English is one of the most popular American exports," Bush said, adding that the program will help "open the global market to more Hungarians."

Bush, declaring that "the Iron Curtain has begun to part," also promised today to give Hungary unlimited access to American markets. And Bush, warmly applauded by his audience at Karl Marx University, also offered a $25-million grant to spur this reform-minded East Bloc nation's fledgling free-enterprise system.

'THRESHOLD OF A NEW ERA'

In Washington, Paul Coverdell, director of the Peace Corps, said, "This is a historic day and the threshold of a new era for the U.S. Peace Corps."
Upper Tisza River Region
The Upper Tisza Region - Szabolcs-Szatmar-Bereg County

Green – Nature “Protected” Areas

Red – Hortobagy National Park
Bottomland Habitat

Bodrog River meets the Tisza River
Tokaj Wine Region
Tisza River
Bodrog River
Bottomland Habitats
Oxbow lake wetland
Forest wetland
Wet meadow
MAIN MIGRATION ROUTE OF COMMON CRANE GRUS GRUS THROUGH HUNGARY

1  Hortobágy
2  Biharugra
3  Kardoskút
4  Pitvaros
5  Szeged
Breeding site for White Storks (*Cinconia cinconia*) and Black Storks (*Cinconia negra*)
As for the problems in the upper Tisza River, one Peace Corps volunteer, Kevin Anderson, channeled his concern into a concrete proposal for action. Before the workshop, Kevin had been working with the Nyireghyaza Chapter of the Hungarian Ornithological and Nature Protection Society to band sand martins and also to organize a summer environmental camp. Through his work, he discovered that the Upper Tisza not only supports the largest colony of sand martins in Europe, but it is also rich in forest and wetland habitats that provide homes to some of the most diverse wildlife in the country. He realized that a public awareness campaign would be important, given that many of his neighbors in the rural town of Nyireghyaza consider the area an undeveloped “wasteland” that would be more useful if it were developed.

It was after attending the workshop...
Bottomland Habitat Mapping Project 1991

225km along the upper Tisza River
Oxbow lake managed by Upper Tisza Foundation

River Conservation Efforts
Tisza River Ecological Research Field Center
Established 2002
The Upper Tisza River in northeastern Hungary. 2003
Now a cross-border UN Ramsar Wetland of International Importance
VISZONTLÁTÁSRA!