

RIVERS AND RIVER ENCOUNTERS



Follow Me, And Die!
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SNI-005

Rivers & River Encounters

Tables and Musings to Help Make Rivers and River Encounters

Rivers serve many purposes, from water and food supply to transportation and borders. They are impediments to cross or boundaries to defend. Within these pages, you will find ideas and random tables to help you add some variety to the rivers and encounters in, on, and around them more interesting.

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Rivers come in all shapes and sizes, from dry creeks in the desert that only flow when it rains, to mighty rivers like the Missouri, Nile, or Amazon. They all have a source, tributaries, general direction of flow, branches, rapids, falls, and estuaries or mouths. They can be fast, slow, relatively short, or very long. They can freeze over in winter allowing wild herds, trade, or war to cross.

All rivers have a means to cross them, whether by fording, ferrying, boat, or bridge. They all have a means to travel them if wide and deep enough. The creeks I wandered as a boy were rarely deep enough to find a spot to swim, so traffic would cross them at the easiest spot to avoid getting soaked or stuck. Larger rivers, like the Missouri were first avenues of exploration and trade. Nearly any size boat can be found, up to small ships, and a huge number of barges.

Intelligent races can attempt to wrest control of rivers for their own purposes, such as irrigation, dams to store water for dry conditions, dams for hydro power for grinding grain or sawing logs, or for generating electricity. Locks can be implemented to make a river part of a canal to make both trade and travel over difficult terrain more feasible.

Where there is trade, there are towns, warehouses, shops, merchants, thieves, bandits, and river pirates. Where there is trade, the authorities come looking for taxes to pay for putting down the pirates and thieves. As the traffic becomes more peaceful, the taxes increase to cover more and more.

Druids would argue against too drastic a change to a river, using their natural magic to thwart attempts to tame it.

Rivers have their own wonders both to behold and dangerous to the unwary. Huge bluffs overlooking the river make a great place to jump in, but also make a great location for a fort or monster lair. Sand and gravel bars impede traffic, but can aid in crossing. They can also shift during flooding. Bends in rivers can host deep depressions suitable for the biggest fish, and the things that eat the biggest fish.

Low areas form bogs, swamps, marshes, and fens. Trees fall and form areas to block traffic, make a danger to traffic, and hide both game and predator. Beavers construct dams for their homes and to make an environment to their liking. While attractive to other wildlife, farmers and villages may not like it.

Rivers are also a source of water and great cities tend to only be built near them. They can become corrupted or polluted and poison the population and wildlife.

The following terms and the ideas they suggest should be kept in mind when planning adventures involving rivers: terrain, geography, natural hazards, control of traffic, strategic points, wildlife (game and predator), monsters, thieves, bandits, and pirates. navy, patrol, tax and tariff collectors, trade wars, embargoes, boycotts, boat and ship construction, barge traffic, source, width, depth, falls, tributaries, branches, bends, bluffs, fords, ferries, bridges, canals, dams, locks, estuaries, mouths, watersheds. rain, floods, droughts, aqueducts, aquifers, caves, caverns, grottoes, cenotes, glaciers, ice, snow, spring thaw, flash floods, encounters,

Placing Rivers

There are two methods of placing rivers. There may be other ways, but I think they would be sub classes of the following.

1. Let the terrain you place on the map dictate where to put rivers.
2. Draw the rivers first to dictate where you put the terrain.

The following tables will aid with developing the river and its terrain, or help flesh out the river and terrain you provide. All of these tables will give you ideas to make the things they suggest your own.

Keep in mind that water seeks its own level via the easiest path. Water only flows uphill via magic or great technological effort. Rivers do not branch, in most cases. Smaller creeks and rivers feed into larger streams and rivers. Eventually, rivers pour into lakes or seas.

Rivers should flow away from higher elevations, even on vast plains will find the easiest path. If a nearly level plain, the river may meander in miles of switchbacks as it seeks the easiest path to the lowest point.

Topics To Keep In Mind

Rather than plot out the whole river, the GM can pick what part of the river they need for a specific location or encounter.

All rivers have a few things in common:

- Source or starting point
- Beginnings
- Endings
- Crossings
- Portage
- Control of Traffic
- Weather
- Geology

Source

All streams & rivers have a source, or starting point.

- Spring
- Glacial Melt
- Mountain Stream

Beginnings

The source of a river or stream is called the headwaters. Watercourses that begin as springs or flow from other openings in the ground are often considered holy places, or places of magic and healing.

Finding the source of major rivers has been seen as a prize. The Nile was one of the last major rivers in the world to have its source documented by science. There is a game that was released in the 1980s called *Source of The Nile*. It is informed by the period of colonial expansion and exploration in Africa.

Types of Beginnings:

- Spring
- Crack
- Cave – Surface opening of underground river.
Could be a very small opening that is enlarged by those who find it over time.
- Glacial melt
- Mountain peak – The annual spring thaw and rains maintain the flow of water.
- Marshlands

Endings

There are two ways a river is considered to end, as an estuary into a body of water, whether fresh or salt water, such as a lake or ocean, or the confluence of two or more rivers into a single, larger river..

Freshwater bodies can be ponds, lakes, or inland seas. The size of the water body will determine the navigability of the watercourse. Lakes and ponds may have marsh or swamp lands at the estuary in a relatively level area.

Saltwater bodies tend to be seas or oceans. Often the mouth of rivers fill with sediment from silt and may limit navigation by seagoing vessels.

Crossings

When a watercourse crosses your intended path, how do you cross it?

These ideas can also be applied to other barriers, like gaps, gorges, peaks, etc.

■ *Step Over Them*

Walk, Step, Leap, Running Jump - For narrow creeks and streams.

■ *Find a better path*

The banks of creeks can be very steep on one side and low on the other. If traveling with mounts and wagons, it may require miles of detours to find a location to cross.

■ *Natural Bridge*

This can be a tree, rock, packed earth, packed snow, ice, or the bodies or bones of one or more dead creatures.

■ *Directed Natural Bridge*

Such as a root bridges.

These are living trees, roots, or other plant matter guided by humans to cross over gorges and rivers.

They can be quite elaborate and the surface of the bridge can be packed with dirt and fitted with stones to make a solid surface.

Elves, druids, and other forest denizens make such structures in the trees.

Ford

A ford is a location for a natural or artificial crossing that allows individuals, mounts, and wagons to safely cross except during flooding. The ground on each side is often about the same level.

■ *Stepping Stones*

These tend to be smooth round stones that are commonly slick without water. Water makes them more so.

Wise locals will replace or overlay them with flat stones for more sure footing.

■ *Mixed Stone & Natural Gravel*

The shallow area has trapped the smaller rocks and stones creating a wet, but serviceable crossing. The intervention of intelligent species may enhance it or destroy it for their own purposes.

■ *Sandy Crossing*

More gravel and sand than stones. Area could be prone to liquefaction with the sand becoming "quicksand."

■ *Wet Crossing*

Anything from getting your feet wet to not so deep you're swimming for foot traffic.

Anything too deep to walk, but not needing a boat.

Riding a riding animal or pack animal.

A vehicle, whether rowed, polled, or drawn or pushed by animals or an engine.

Ferry

Where the water is consistently deep enough that foot and vehicle traffic can't make it, but a bridge is not justifiable or impossible.

Ferries can cross a distance not much wider than the ferry, to great distances. In addition to crossing watercourses, they can cross lakes and seas to islands or cross straits.

Ferries can be tethered or free. The simplest tethered ferries use the tether to pull the ferry and cargo along. Some use a capstan powered by the crew or beast(s) of burden. The capstan is put on the shore for the most efficiency. It could also be a tread wheel powered by the crew or beast of burden.

Ferries have a fee that is what the market will bear. There is taxation of it, unless the ferry is initiated prior to "civilization" catching up with it.

Often ferries exist in slightly deeper water to a nearby ford and is for those who want to stay dry, or for cargo that they don't want to risk not getting to market. In this case, the ferry can't charge too much, or people will simply go to the ford.

Ferries are also used in locations that are too wide for existing technology or resources to bridge.

Ferries can be passenger ferries which only accommodate people and their personal possessions. Basically boats.

Vehicle and cargo ferries have ramps and flat decks to enable beast drawn vehicles and powered vehicles to embark and disembark.

Bridge

These vary from simple footbridges for pedestrian traffic, to bridges allowing wagons to cross.

Narrow bridges will have a system to control the flow of traffic if it is only wide enough for traffic in one direction.

Daily shift changes, the length of the market day, etc. will influence the busiest time for narrow bridges.

Taxes, fees, and tariffs are collected for maintenance costs and revenue for the crown.

Construction most commonly uses the cheapest material available that can do the job.

Wood is used for the narrowest spans that are not easily forded. Heavy traffic may lead to replacement with stone for durability and less frequent repairs and breakdowns. While wooden bridges are more prone to washing out, even stone bridges can fail in severe floods with logs of debris.

Stone can be used from the river, if enough can be found nearby. Otherwise you will need a quarry within a reasonable distance for the materials.

Brick can be used for narrow spans if the materials and technology exist.

Cement and Concrete technology can increase the distance that can be spanned with the knowledge to use pilings at the base of arches.

Aqueducts are bridges for water. In areas where they cross the same spans as other traffic, they could share the same bridge.

Aqueducts can also be used to extend watercourses for waterborne travel, and are called navigable aqueducts.

An ancient well-built bridge may stay in service for centuries with little or no maintenance. If a portion of the bridge collapses and cannot be repaired, the remaining surface may become living space or a market, crowded with shops and houses, with a rope bridge connecting the remaining surface of the bridge.

Portage

Similar to how a watercourse can interrupt land travel, land can interrupt water travel. There can be low points in a river such as where there is a ford, gravel or sand bar, collection of large stones, debris deposited by floods, or low water caused by drought.

Portaging is simply porting (carrying) your craft overland until you reach more water. Historically, one thinks of the canoes of trappers and traders, and the boats of Lewis & Clark. However, there have been instances of sizable boats and ships being portaged. Normally, all but the smallest crafts are unloaded prior to portaging. This requires sufficient numbers to carry both the vessel and the cargo.

For the largest vessels, trees are cut to make rollers for the vessel to be propelled over the rolling logs. The crew moves the logs already traversed to the front repeatedly, until deep water is reached.

In ancient Greece there was a paved trackway, called the *Diolkos*, to ease moving hips and cargo over the isthmus of Corinth. This was roughly four miles.

There are many types of things that can force the occupants of a water craft to portage it.

- Low water
- Drought
- Sand bar
- Gravel bar
- Rocks
- Landslide
- Avalanche
- Ice
- Flood debris – rocks, trees, building, bodies, etc.
- New bridges or ferry tether lines.
- Collapsed bridges
- Sunken or wrecked vessels.
- Large water creatures like hippos, or monsters.
- Rapids
- Falls

Control of Traffic

Whether traveling on or across a watercourse, others will want to control it. Control can be in the form of legal or extralegal activity. What is considered extralegal in the heart of civilization, might be the closest thing to law in the borderlands.

Theft

Lone Thieves - These will be the pick pockets and those who prey on lone travelers.

Bandits – A bit more organized and may operate a protection racket at the crossing or narrow point.

Pirates – They will roam up and down the river to take the trade goods and other valuables. Land raids will be within striking distance of the river with a path kept clear to their fast escape route down river.

Law

Whether the frontier suddenly arrives or the already civilized interior, the law will make its presence felt in the form of taxation, fees, tariffs, fines and more.

Individual – A self-appointed law man or the designated constable of the jurisdiction. They might deputize assistants. A paladin passing through might disrupt the bandits or pirates, and have to stay on to prevent their return. Any fees to help cover expenses, most will consider to be taxes.

Garrison – Troops in a fortification. They will be placed in the most strategic point. If the high point is too far to practically control the traffic choke point on the river, they will establish a standing watch, or regular patrol to the high point.

In a more civilized region or cities, the garrison will be the gatehouse or tower built over the tollbooth. A village or town will arise around these locations.

Fort or Castle – Troops will have a more substantial and imposing base to project even more strength.

Way Stations and Hostels – Way stations for officials, hostels, inns, and taverns will rise up along a road or river that is the main trade route. In the wilderness, the ruins of these from fallen empires might be the center point for a small village, or a hideout for bandits, goblins, or a lair of some monster.

Boats, Barges, and Ships – The national or local ruler will patrol the river to protect their own investments in trade and to ensure taxes keep rolling in to maintain their power.

Weather

Weather affects navigation of watercourses. Too much rain leads to flooding and until the chaos subsides navigation is dangerous. Drought leads to inability to travel, without portage. Seasonal variations in rainfall will lead to semi-predictable peaks and valleys in navigability. Winter in temperate and further regions will lead to ice partially or completely blocking traffic via the river.

If frozen to sufficient thickness wild herd animals, followed by their predators can cross rivers that lack high banks. Bandits and war parties can utilize this new bridge also. Ice that is thin leads to accidents. Children feared lost beneath the ice or in danger of it could be an adventure hook.

Drought of an extent to halt traffic will have repercussions on trade, irrigation, diplomacy, and many potentially dying of thirst. Water from a river is easier to access than boring through rock. Work projects to build cisterns for water storage for the next drought, and seeking water will lead to finding items of lost civilizations and provide many adventure hooks.

Geology

Hills and mountains and sedimentary rock along the banks will most likely hold some form of cave or cavern. They may be quite obvious or only be known to a few locals, or be the lairs of predators or monsters. Some could be bandit hideouts, hidden behind waterfalls, surface entrances to a cavern system that eventually leads to the underdark, or the interior world of the planet.

Cliffs are natural outlooks and can slump if earth or soft stone, or boulders or dead trees can come crashing down. Wyverns might nest on a cliff overlooking the river crossing causing an impact on trade and thus taxes.

What's On The Bluff?

d6	WHAT
1	Cave
2	Tower
3	Fort
4	Town
5	Animals
6	Monsters

d6	STATUS
1	Ruin/Empty
2	Ruin/Occupied
3	Occupied
4	Occupied
5	Abandoned/Empty
6	Abandoned/Occupied

Populate caves with cave dwelling animals, monsters, or use What's In The Vessel Ahead?

Reasons for ruins could be fire, earthquake, attack, or just really old.

Occupied could be by animals or monsters making a lair, or by squatters or bandits.

What's That Vessel Ahead?

d6	What's That Vessel Ahead?
1	Canoe
2	Rowboat
3	Raft
4	Barge
5	Ship
6	Wreck

d6	What's In The Vessel Ahead?
1	Empty
2	Explorers/Trappers /Adventurers
3	Fugitives
4	Bandits/Pirates
5	Merchants
6	Patrol

An empty vessel could be abandoned, or drifted off while the occupants were ashore. Occupants could be dead or captured. There might be a hungry or wounded animal or monster aboard.

Bandits, Pirates, and Patrols will be armed. Bandits and Pirates will hide their weapons until ready to strike. Patrols will present their weapons as a show of force.

What's In The Deep Spot?

d6	What's In The Deep Spot?
1	Normal fish, some large
2	Big, hungry, monstrous fish
3	Giant Crawfish
4	Alligator or Crocodile
5	Intelligent Freshwater Creature
6	Nothing

A deep spot in a stream or river is usually at a bend where the flowing water can scoop out a wider, deeper channel.

What Is the Nearest Crossing?

d6	What Is The Nearest Crossing?
1-2	Ford
3-4	Ferry
5-6	Bridge

d6	How Far Is The Nearest Crossing?
1	d4 miles
2	d6 miles
3	D8 miles
4	d10 miles
5	d12 miles
6	d20 miles

Roll another d6:

Odd = Upstream, Even = Downstream

Rapids - Is there a line at the rapids for vessels, people, mounts, wild animals, or monsters to take their turn to cross or shoot the rapids?

Is there a path to portage around the rapids? Is it visible from the river?

Fast or Slow rapids? Are they basically level, or do they have drops?

How Many Drops In The Rapids?

d6	How Many Drops In this Section Of Rapids?
1	d4 Drops
2	d6 Drops
3	d8 Drops
4	d10 Drops
5	d12 Drops
6	d20 Drops

Roll another d6:

Odd = 1 die, Even = 2 dice of above type.

Are their sharp or jagged rocks in the rapids?

Are their fallen trees or the debris of wrecks, with or without survivors, on the rapids?

Is there a falls after the rapids?

Is there a section of rapids that will trap a boat if it doesn't go through with enough speed or proper angle?

What's Behind The Water Fall?

d6	What's Behind The Water Fall?
1	Sheer Rock
2	Jagged Outcroppings
3	Narrow Slippery Path Between Banks
4	Cave Entrance (Determine size of entrance & cave.)
5	Rock Overhang With Small Niche Below (May be a hidey hole for an animal, or a wounded animal, or skeleton is found.)
6	Dark Damp Warm Opening (Actually mouth of an ambush predator.)

What's In The Pool Beneath The Falls?

d6	What's In The Pool Beneath The Falls?
1	Use What's In The Deep Spot on p. 9
2	Deep spot with underwater cave entrance.
3	Shallow Pool
4	Flat Rock Outcropping
5	Jagged Rocks
6	

At a small rapids, or a mill pond created by a low dam, you may find a mill.

What Does The Mill Do?

d8	What Does The Mill Do?
1	Wire Drawing Mills
2	Sawmill (wood or stone, such as marble)
3	Gristmill (grain)
4	Gristmill (grain)
5	Textiles (spinning & weaving)
6	Trip Hammermills (shredding or crushing grain or stone, or blacksmithing)
7	Rolling Mills (cold or hot rolling metal)
8	Paper

See the Status table on page 6 to determine the status of the mill.

How many major tributaries flow into this river?
1d6

Major or minor rivers?
1d6 Even = Major, Odd = Minor.

How many minor tributaries in the next 100 miles?
1d20. Lower numbers indicate a dry area due to hills or mountains on one or both banks that slop away from the river. If two banks it is a canyon.

Higher numbers indicate a wet area, either a lowland wetland, or the slopes of hills and mountains direct the flow towards the river.

How many rapids on the river?

How many falls on the river? How many of those falls are from tributaries, where the falls is the inlet from the tributary river?

How high are the falls? Here is a list to give you some ideas.

- Angel Falls, Venezuela is 979 meters (3,212 feet)
- Tugela Falls, South Africa is 948 meters (3,220 feet)
- Tres Hemanas Falls, Peru 914 meters (2,999 feet)
- Olo’upene Falls, USA 900 meters (2,953 feet)
- There are many other falls of great heights. These tend not to have the volume of water as shorter falls.
- Victoria Falls, southern Africa 108 meters (355 feet) It is between the nations of Zambia and Zimbabwe.
- Niagara Falls, USA 53.6 meters (176 feet)
NOTE: Rocks at the bottom reduce this by 100 feet.

Natural Obstacles

d6	Natural Obstacles
1	Rapids
2	Log Jam (Either flood or logging upriver.)
3	Falls
4	Shallows/Ford
5	Rockslide from Cliff
6	Tree Fall

Manufactured Obstacles

d6	Manufactured Obstacles
1	Beaver Dam (normal or giant beavers)
2	Dam (mill pond, irrigation, town water supply, flood control)
3	Locks from Canal
4	Wreck (accident, storm, or deliberate)
5	Rock Fall from cliff (Preparations for a dam or ambush)
6	Tree Fall (ambush or careless loggers)

Hazards

d10	Hazards
1	Flood (heavy rain, snow melt, dam break)
2	Rock Fall
3	Tree Fall
4	Earthquake (Rock and/or Tree Fall)
5	Tornado/Waterspout
6	Volcanoes (earthquake, rock & tree fall, steam, pyroclastic flow, etc.)
7	Quicksand
8	Dangerous River Animals (alligator, crocodile, hippo, bears hunting fish, large wild herds crossing river)
9	Battle/War
10	Large Animals or Monsters (fighting due to mating season, recent kill of prey, territory, etc.)

Characteristics Of River Section

d8	Characteristics Of This Section Of River...
1	Long, wide, and slow
2	Long, narrow, and fast
3	Series of rapids
4	Series of rapids & falls
5	Series of switchbacks
6	Series of falls
7	High cliffs on one or both sides
8	Low marshlands with many channels

Canals

Does it have locks?

Ancient canals did not have locks as they cut them in relatively flat lands.

Any hills or rise higher than digging alone can handle will require locks.

Locks require the ability to both flood the lock once the gates are closed, and drain the lock so the gates can be opened.

Most locks will be narrow and result in narrower barges.

Erie Canal barges were pulled by mules walking on a path along the canal. The teamster walked with the mule(s).

Canals can also be polled.

Canals could be combined with an irrigation ditch to help get water to fields.

Irrigation ditches are prone to evaporation, but are easier to build than tunnels bored through rock or lined with stone or brick.

How far is it from the river to the fields?

What are the main crops in this region? Food crops, or money crops, like cotton for cloth or rare spices.

If a river or creek is in a desert or arid area is it a permanent watercourse, or seasonal?

If it is seasonal, the locals may do all they can to fill cisterns, ponds, or other water cachements.

Seasonal rivers are prone to flooding early in the season and late in the season there is not enough for navigation, if ever.

If a permanent river, civilization will fan out up to 50 miles or so either side of the river as with the ancient Nile and Mesopotamian civilizations.

Is the river a “frontier” for one civilization that has just “discovered” it, but just “the river” for another? This can result in the river becoming a boundary between clashing cultures until they either decide to live together, or one wrests control of both banks of the river. In the latter case, control of the river would tend to fluctuate every generation or so as a region in flux. Unless one side had a total victory over the other to maintain control for decades or centuries.

Conclusion

Use this booklet as a framework for building your own campaign world. The preceding are tools to help build locations and encounters. One need not detail every mile, bend, fall, and rapids in a river. Merely specify what one will find in a particular point along a river.

If you don't want to map out a river journey, don't suggest any information to your party to help them think of it. Make all journeys cross rivers and you won't have to do much detail, or use the same methods for land travel, focus on the narrative of the journey with only highlights of the scenery. Placing specific encounters, or developing encounters that you can fit into any place along a river will ease your work load.

Glossary

Stream: A body of water with surface water flowing within the bed and banks of a channel.

Types of Streams:

Brook: A stream smaller than a creek, especially one that is fed by a spring or seep. It is usually small and easily forded. A brook is characterized by its shallowness.

Creek: In North America, Australia and New Zealand, a small to medium-sized natural stream. Sometimes navigable by motor craft and may be intermittent.

Burn: A watercourse (in size from a large stream to a small river).

River: A large natural stream, which may be a waterway.

Runnel: The linear channel between the parallel ridges or bars on a shoreline beach or river floodplain, or between a bar and the shore. Also called a **swale**.

Tributary: A contributory stream, or a stream which does not reach a static body of water such as a lake or ocean, but joins another river (a parent river). Sometimes also called a branch or fork.

Wadi: A usually dry creek bed or gulch that temporarily fills with water after a heavy rain, or seasonally. See also **Arroyo** and **Wadi** (creek).

Pool: A segment where the water is deeper and slower moving.

Rapids: A turbulent, fast-flowing stretch of a stream or river.

Riffle: A segment where the flow is shallower and more turbulent.

Run: A somewhat smoothly flowing segment of the stream.

Bayou: A slow-moving stream or a marshy lake.

Headland: An area of water bordered by land on three sides.

Kettle (or kettle lake): A shallow, sediment-filled body of water formed by retreating glaciers or draining floodwaters.

Mere: A lake or body of water that is broad in relation to its depth.

Salt marsh: A type of marsh that is a transitional zone between land and an area, such as a slough, bay, or estuary, with salty or brackish water.

Source: The original point from which the river or stream flows. A river's source is sometimes a spring.

Subglacial lake: A lake that is permanently covered by ice and whose water remains liquid by the pressure of the ice sheet and geothermal heating. They often occur under glaciers or ice caps

Tarn: A mountain lake or pool formed in a cirque excavated by a glacier.

A cirque is an amphitheater-like valley formed by glacial erosion.

A moraine may form a natural dam below a tarn

Moraine is formed from debris previously carried along by a glacier and normally consisting of somewhat rounded particles ranging in size from large boulders to minute glacial flour (silt like rock).

Vernal pool: A shallow, natural depression in level ground, with no permanent above-ground outlet, that holds water seasonally.

Wetland: An environment "at the interface between truly terrestrial ecosystems and truly aquatic systems making them different from each yet highly dependent on both".

Types of Wetland:

Swamp: A wetland that features permanent inundation of large areas of land by shallow bodies of water, generally with a substantial number of hummocks, or dry-land protrusions. A swamp is a wetland that is forested

Marsh: A marsh is a wetland that is dominated by herbaceous rather than woody plant species, such as grasses, rushes or reeds. Often along edges of lakes and streams.

A **bog or bogland** is a wetland that accumulates peat, a deposit of dead plant material—often mosses, and in a majority of cases, sphagnum moss. It is one of the four main types of wetlands. Other names for bogs include **mire**, **quagmire**, and **muskeg**; alkaline mires are called **fens**.

Fen: Along with **bogs**, fens are a kind of **mire**. Fens frequently have a high diversity of other plant species including carnivorous plants such as *Pinguicula*, also called butterworts. Lure, trap, and digest insects with sticky, glandular leaves.

Mire: A mire (or **quagmire**) is a wetland type, dominated by living, peat-forming plants. There are four types of mire: bog, fen, marsh and swamp. A **bog** is a mire that due to its location relative to the surrounding landscape obtains most of its water from rainfall (ombrotrophic), while a **fen** is located on a slope, flat, or depression and gets most of its water from soil- or groundwater (minerotrophic).

Waterfall or cascade: The fall of water where the stream goes over a sudden drop called a knickpoint; some knickpoints are formed by erosion when water flows over an especially resistant stratum, followed by one less so. The stream expends kinetic energy in "trying" to eliminate the knickpoint.

Waterway: Any navigable body of water

Spring: A point at which water flows from an aquifer to the Earth's surface.

Types of Spring:

Seepage or filtration spring. The term seep refers to springs with small flow rates in which the source water has filtered through permeable earth.

Fracture springs, discharge from faults, joints, or fissures in the earth, in which springs have followed a natural course of voids or weaknesses in the bedrock.

Tubular springs, in which the water flows from underground caverns.

Wonky holes, which are freshwater submarine exit points for coral and sediment covered sediment filled old river channels.

Sacred springs: A spring that has religious significance. For example, sacred springs in ancient Greece were home to water spirits, such as nymphs.

Weir: A weir or low head dam is a barrier across the width of a river that alters the flow characteristics of water and usually results in a change in the height of the river level. There are many designs of weir, but commonly water flows freely over the top of the weir crest before cascading down to a lower level.

Mill pond: A reservoir built to provide flowing water to a watermill

Watermills: Mill ponds are created by a **weir** that impounds water that then flows over the structure. The energy created by the change in height of the water can then be used to power waterwheels that power various kinds of water mills.

Grotto: A natural or artificial cave used by humans in both modern times and antiquity, and historically or prehistorically. Naturally occurring grottoes are often small caves near water that are usually flooded or liable to flood at high tide.

Aqueduct: Bridges for conveying water, also called water bridges, are constructed to convey watercourses across gaps such as valleys or ravines. The term aqueduct may also be used to refer to the entire watercourse, as well as the bridge. Large navigable aqueducts are used as transport links for boats or ships.

Watercourse: The channel that a flowing body of water follows.

Current: The flow of water, in a river or stream, influenced by gravity as the water moves downhill. In tidal zones, the current in rivers and streams may reverse on the flood tide before resuming on the ebb tide.

Banks: Land along the sides of rivers. May be low or high, earth or rock.

Upper Course: Where the river is still young and quite small, often up in the hills. Often steep valleys and waterfalls are found in the upper course.

Confluence: Where two rivers meet.

Tributary: A smaller river that flows into a bigger river

Middle Course: This is when the river gets larger- the valleys may be wider and the slopes more gentle.

Meander: A Meander is when the river flows in S-shaped bends.

Ox-Bow Lake: an isolated pond left behind after a river changes course. Also **Billabong** in Australia.

Flood Plain: This is normally in the lower course of the river, and where the land either side of the river is very flat; when there is a lot of rain, the river may overflow and flood the land either side.

Lower Course: The Lower course of the river is when it approaches the sea. The river is at its widest, and it often goes through flat land (the flood plain).

Mouth: The river mouth is where the river meets the sea- it may be very wide (an **Estuary**) or split into smaller channels (called a **Delta**).

Estuary: A wide river mouth.

Delta: A river mouth with many channels due to silt build up.

Distributary: Opposite of a Tributary is when one or more channels branch away from the main channel. This is most common in river deltas.

Upstream: In the direction of the river source, opposite its flow.

Downstream: In the direction of the river mouth, or with the flow.

River Bed: The bottom of the river.

Aquifer: An underground layer of water-bearing permeable rock. It is groundwater that can be accessed via a well.

Cistern: Waterproof receptacle for holding liquids, usually water

Lake: Body of water formed by the inflow of a river or stream, and there may be one or more outflows. There is no formal definition to distinguish a lake from a pond, other than a general understanding that a lake is bigger. They may be formed naturally by the geological conditions, or created by natural or constructed dams.

The contents of this glossary is thanks to the many people who have contributed the information to Wikipedia. I have re-phrased many terms for length and combined different terms for the same thing into a single entry.