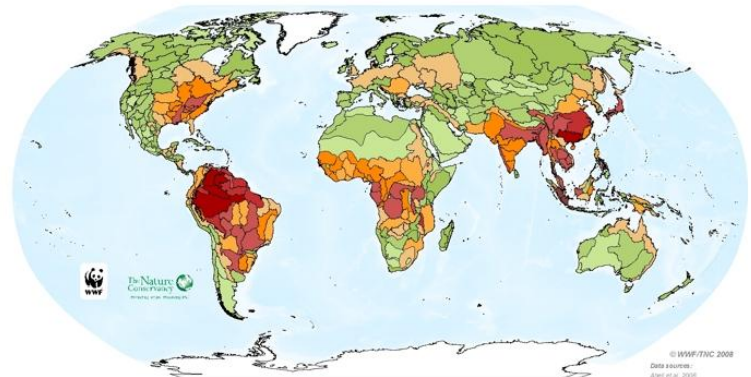


## Freshwater Diversity

- Relatively rare habitat
  - 0.01% of Earth's water
  - 0.8% of earth surface
- Disproportionately high biodiversity
  - 6% of all described species!
  - 1/3 of all vertebrate species!
  - Freshwater fishes represent 45% of all fishes
  - Freshwater mollusks represent about 25% of all molluscs.
- Lots of unknown biodiversity
  - Each year, around 1% of known fishes are discovered.



Biodiversity is highest in large, old, river systems that are close to the equator.

## *Why do freshwaters have such high biodiversity?*

### Loss of Biodiversity

- Freshwater species are disappearing alarmingly fast
- 32% of global amphibians are threatened with extinction.
- Species of mussels, crayfish, fishes, and amphibians might be disappearing at 4% per decade
  - 5X higher than terrestrial losses
- Decrease in population abundances
- Decrease in range of species
  - E.g., in the lower Colorado, species have decrease 45% in range size.

Many large tropical river systems have high rates of endemism, diversity, and imperilment.

For example, in the State of Alabama in SE US

Group	#	% of North American Taxa	%Endemic	%Imperiled
Fishes	303	38	41	10
Snails	147	43	77	65
Mussels	171	60	34	69
Turtles	23	52	22	43

\*data from Allan and Castillo

### Threats to stream biodiversity

Human pressures on freshwaters are increasing.

Figure from Strayer and Dudgeon 2010

#### THREATS TO BIODIVERSITY

1. Overexploitation
2. Water pollution
3. Flow modification
4. Species invasion
5. Habitat degradation
6. Climate change?

