



Increasing Protection of River Catchments

Rivers are critical for providing humanity with water, food and other ecosystem services. Yet, they are under extreme pressure from numerous sources and their faunas are highly threatened. Protected areas can contribute to maintaining the integrity of river systems. Until recently, however, there was no globally consistent and detailed river dataset that allowed for assessing gaps in river coverage by the current protected area (PA) network¹.

Using a newly available global river dataset², WWF, in collaboration with McGill University³ and UNEP-WCMC, evaluated the extent of coverage by calculating both the length of rivers⁴ that lie within PAs and the length of rivers that have their entire upstream catchments under protection.⁵

Globally, 69% of rivers are without protected areas in their upstream catchment. Increasing protection of river catchments offers a strong opportunity to target new PAs to meet both terrestrial and freshwater commitments under the CBD. The proportion of rivers with their upstream catchment under protection is highest for small rivers and declines sharply for medium size rivers, nearing zero for the largest ones (Table 1). The relatively high global average of about 12% with upstream catchment protection is heavily driven by the large number of small rivers with higher protection levels. About 17% of the length of all rivers lies within the PA network, with less variation among river sizes.

Table 1 Protection of Rivers Across Size Classes

Proportion of river length by size class that is within PAs, or that has its upstream catchment in PAs		
River size by discharge (m ³ /s)	% Total Length in PAs	% with Upstream Catchment Protected
Small (0.1-1)	16.7	13.0
Small-Medium (1-10)	16.9	10.0
Medium (10-100)	17.7	5.6
Medium-Large (100-1,000)	19.3	3.0
Large (1,000-10,000)	19.1	0.6
Very Large (>= 10,000)	17.2	0.0
All size classes	16.9	11.6

These global statistics, however, mask differences among regions. Central and South America have the highest proportion of rivers both in PAs and under upstream protection. Europe and the Middle East, North America, and Asia, on the other hand, have lower levels of rivers under protection (Table 2).

At the basin level, certain basins are doing much better than others; for example, high levels of river protection occur in the Amazon and Zambezi Basins, and markedly low levels occur in many others (e.g., the Mississippi-Missouri, Parana, Indus, Murray-Darling, Volga, and Tigris-Euphrates, among others) (see Figure 1).

Table 2 Protection of Rivers Across Regions

Proportion of river length by region that is within PAs or that has its upstream catchment in PAs. North America only includes Canada and U.S.		
Region	% Total Length in PAs	% with Upstream Catchment Protected
Africa	15.1	9.0
Asia	11.2	7.1
Australia	15.7	8.5
Central America	18.3	12.3
Europe & Middle East	14.2	5.6
North America	12.3	6.6
South America	30.4	26.1



Key Findings

- Globally, 69% of rivers have no protected areas in their upstream catchment
- Length of rivers in PAs is relatively high globally (17%), but this number masks under-representation in many regions and basins
- Smaller rivers have 10-13% of their upstream catchment in protected areas, but levels of upstream protection quickly diminish to near zero for larger rivers

Footnotes

¹ Includes nationally designated protected areas from the January 2010 version of the World Database on Protected Areas (IUCN and UNEP 2010) and Ramsar sites.

² HydroSHEDS (Hydrological data and maps based on Shuttle Elevation Derivatives at multiple Scales): Available at <http://hydrosheds.cr.usgs.gov/>.

³ Bernhard Lehner, Department of Geography, McGill University, Montreal, Canada.

⁴ Because of the uncertainties in global data, the smallest size river that could reliably be delineated was defined as one with an annual average discharge of > 0.1 m³/sec.

⁵ The upstream catchment was considered to be under protection for a particular reach of river if at least 98% of its upstream catchment occurred within a national level protected area or a Ramsar site.

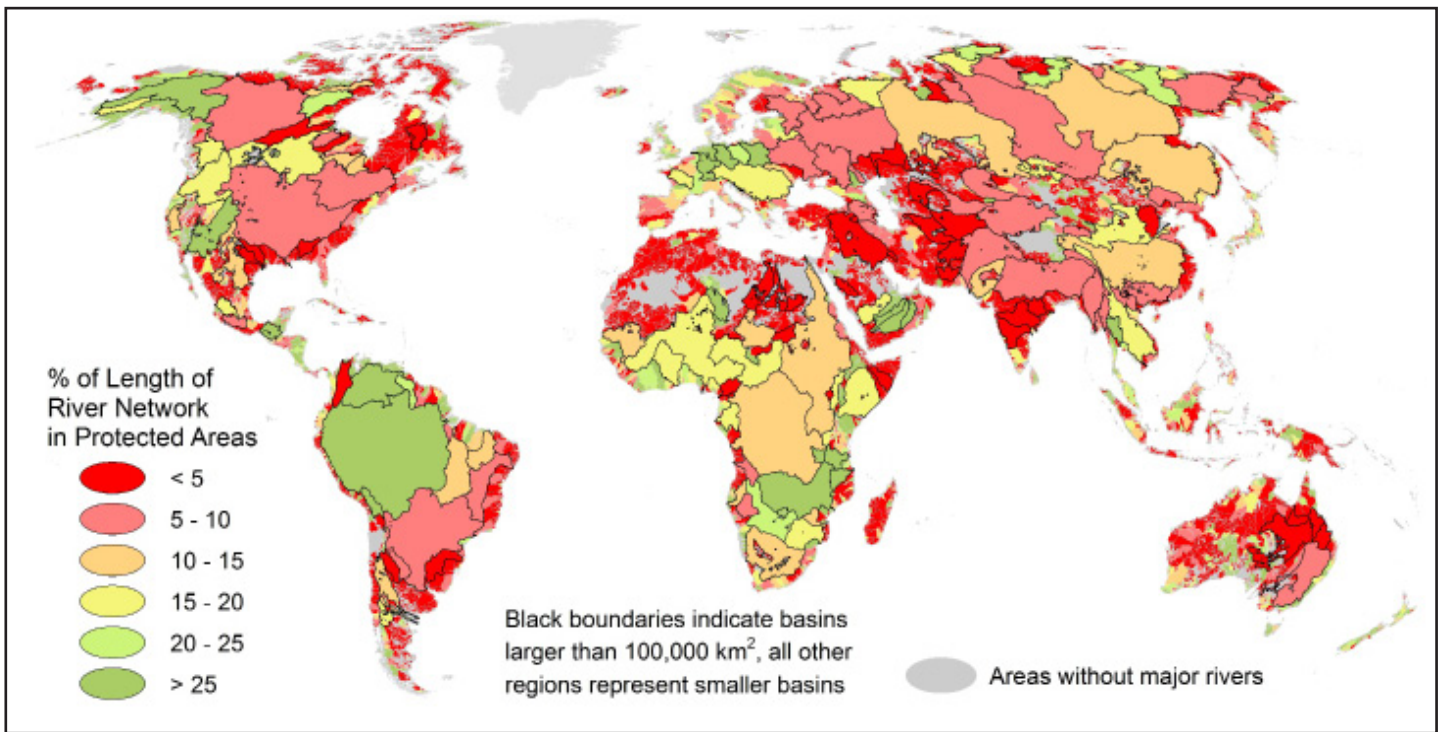


Figure 1 Percent of length of river network in protected areas by basin.

Recommendations

Protected areas are only one mechanism in the toolbox for freshwater conservation and should be nested within a larger basin management approach to conserve the full suite of species and habitats within a basin. They should also be designed and managed adaptively regarding climate change.

Representation of rivers within PAs provides one measure of protection but gives no information about actual PA management for riverine conservation targets; an assessment of PA management objectives could reveal further gaps.

Based on our analysis, we offer these specific recommendations for protected areas that would increase their ability to conserve freshwater species and systems:

- Increase coverage of river systems, and representation of all size classes, in poorly protected basins and regions.
- Revise Target 11 to state, “By 2020, at least 20% of terrestrial and inland water, and 20% of coastal and marine areas... have been protected through representative networks of effectively managed protected areas and other means...”
- In addition to an indicator based on river length, use a new and advanced indicator that combines river length, connectivity, and upstream catchment protection to track progress towards the PA target (Target 11) for river ecosystems.
- Increase the level of upstream catchment protection for larger rivers as much as feasible, with a focus on those lands and waters with the greatest influence on the integrity of the downstream river system.
- Limit the use of rivers as PA boundaries, delineating new PAs and expanding existing PAs to follow appropriately-sized sub-catchment boundaries, as possible.

For more information

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