Convention on Biological Diversity

MINAMATA CONVENTION ON MERCURY

Mercury and its potential impacts on biological diversity

International Conference on Mercury as a Global Pollutant 2024

Plenary Speakers

In order of speaking:

- David Evers, Biodiversity Research Institute
- Monika Stankiewicz, United Nations Environment Programme
- Malgorzata Stylo, United Nations Environment Programme
- Luis Fernandez, Centro de Innovación Científica Amazónica
- Claudia Vega, Centro de Innovacion Científica Amazonica
- Allison Aldous, The Nature Conservancy

Convention on Biological Diversity

MINAMATA CONVENTION ON MERCURY

David Evers

Biodiversity Research Institute

16th ICMGP Cape Town 2024

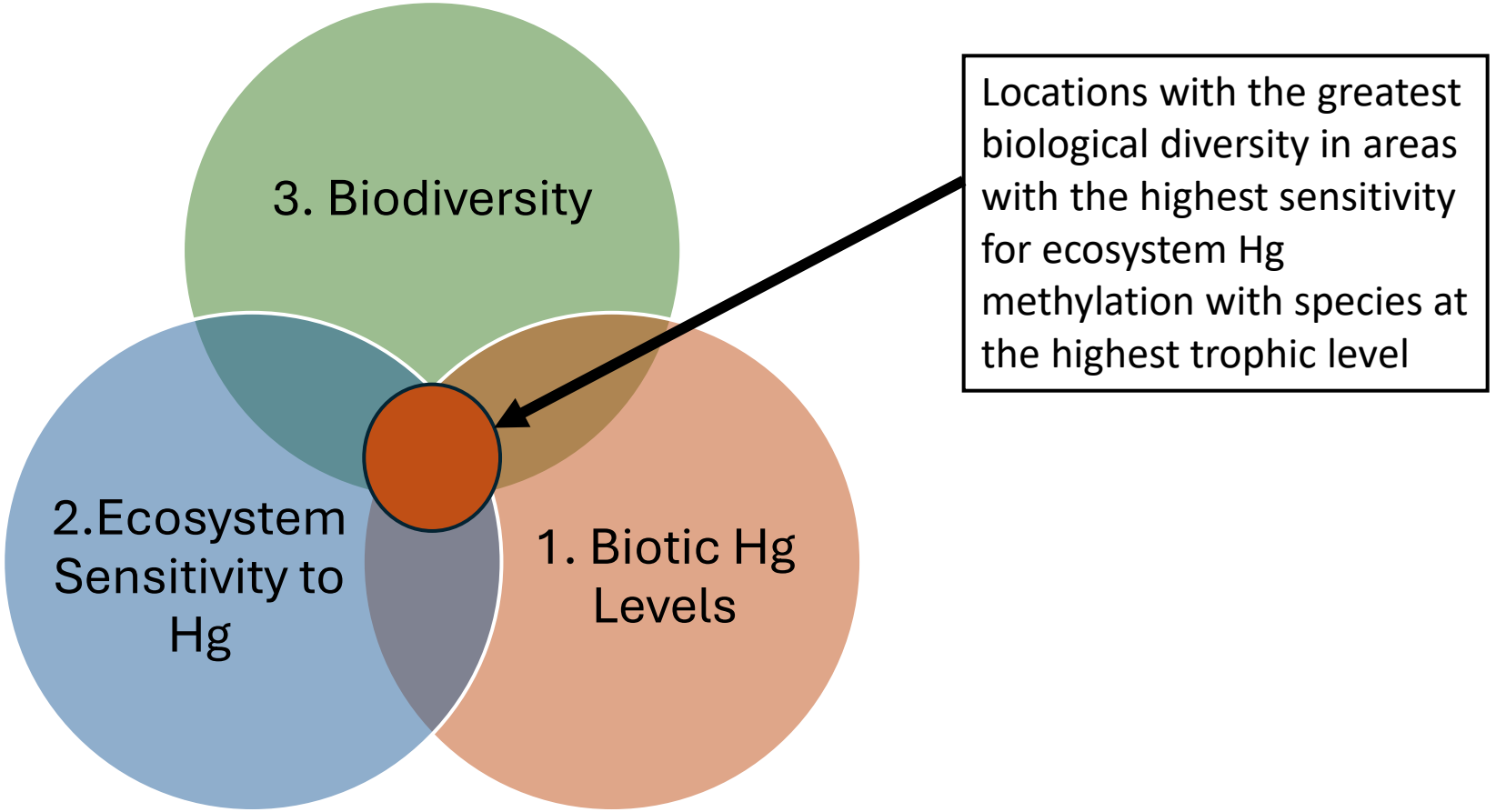
Hg

BIODIVERSITY RESEARCH INSTITUTE
innovative wildlife science

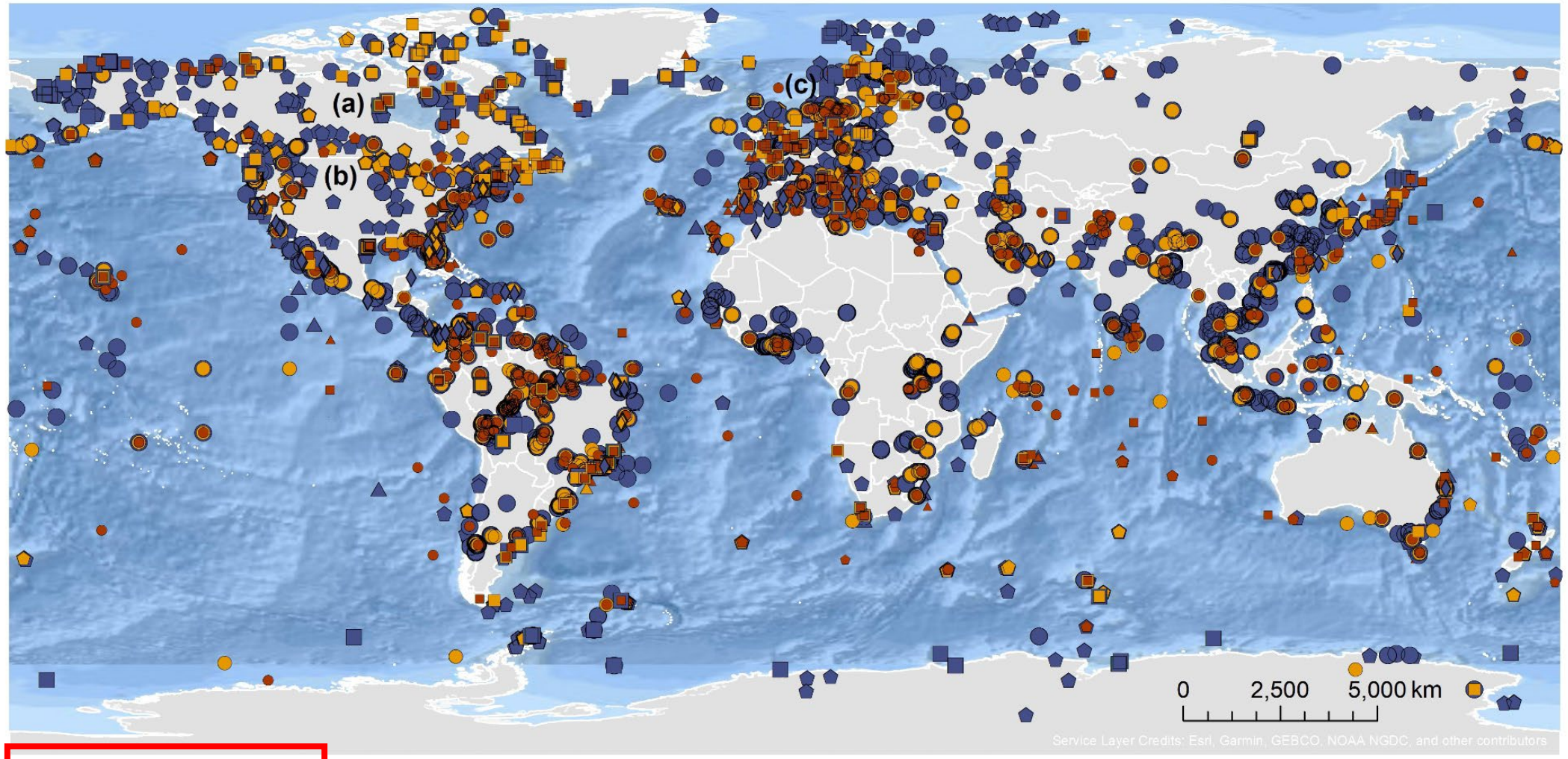
International Conference on Mercury as a Global Pollutant 2024

Important relationships for determining impacts to biological diversity

- Policy decisions are now in place to explore linkages of the Minamata Convention and the Convention on Biological Diversity



Distribution of five major taxa and their total Hg concentrations in three risk categories based on mean data derived from a survey of the available peer-reviewed literature



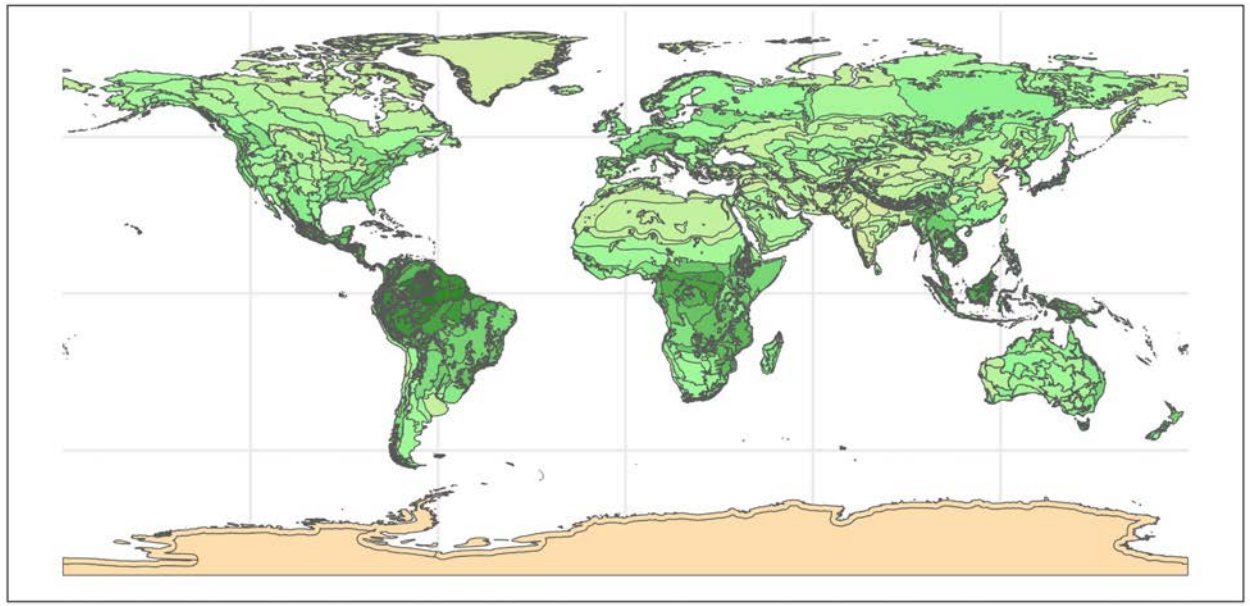
Global Hg data distribution by major taxa

		Fish	Sea Turtles	Birds	Marine Mammals	Subtotal
Continental						
	Africa	6,126	n/a	192	n/a	6,318
	Antarctica	0	n/a	0	n/a	0
	Asia	14,093	n/a	3,794	567*	18,454
	Australia	323	n/a	3	n/a	326
	Europe	62,321	n/a	7,712	220*	70,253
	North America	191,346	n/a	50,449	n/a	241,795
	South America	38,126	n/a	356	95*	38,577
	Subtotal	**312,335**	**n/a**	**62,506**	**882**	**375,723**
Oceanic						
	Antarctic	1,228	n/a	6,305	1,738	9,271
	Arctic	1,808	n/a	7,498	8,730	18,036
	Gulf of Mexico-Caribbean	8,480	557	467	818	10,322
	Indian	9,662	397	1,851	487	12,397
	Mediterranean	13,720	773	2,054	2,600	19,147
	North Atlantic	26,504	1,438	13,951	6,698	48,591
	North Pacific	24,049	1,077	33,933	6,996	66,055
	South Atlantic	12,428	714	2,808	1,398	17,348
	South Pacific	8,152	51	3,054	351	11,608
	Subtotal	**106,031**	**5,007**	**71,921**	**29,816**	**212,775**
Total		**418,366**	**5,007**	**134,427**	**30,698**	**588,498**

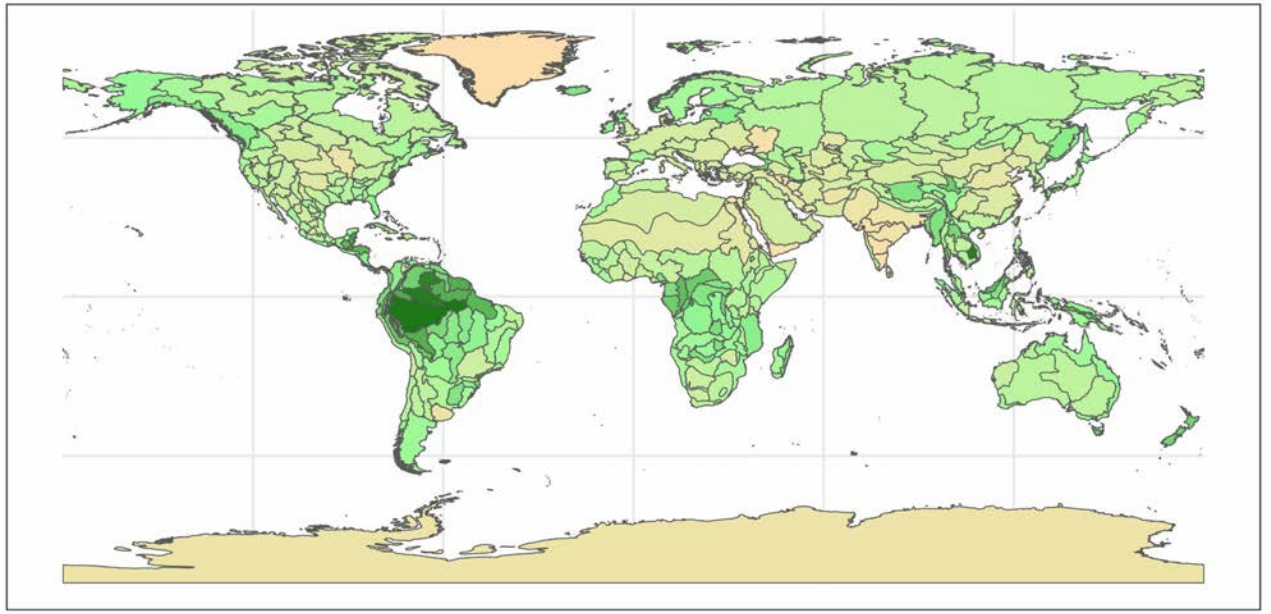
Meta-analyses of global biotic mercury concentrations. Percentage of species, genera, or families that include individuals with muscle Hg concentrations exceeding the U.S. EPA – FDA human health threshold of 0.46 µg/g, ww ("choices to avoid").

Taxa Group of interest to human health	Taxonomic Unit	Number Over	Percent Over
Tuna	Species (commercial)	6 of 9	67%
Billfish	Species	5 of 7	71%
Sharks	Genera	21 of 24	88%
Marine Fish – Mediterranean Sea	Families	24 of 35	69%
Marine Fish – Caribbean Sea	Families	25 of 39	64%
Freshwater Fish – African	Families	3 of 16	19%
Freshwater Fish – South America	Families	16 of 30	53%
Freshwater Fish – Asia	Families	21 of 31	39%
Freshwater Fish – North America/Europe	Families	12 of 25	48%
Seabirds – Arctic and subarctic	Species	6 of 20	30%
Marine Mammals – toothed whales	Species	38 of 38	100%

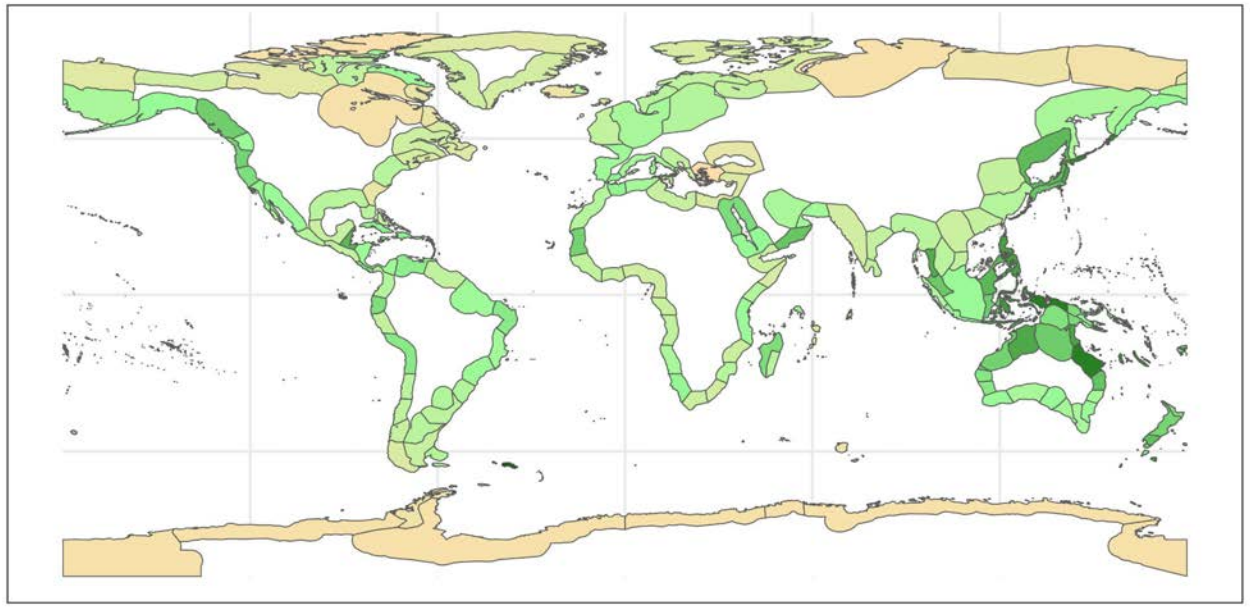
Terrestrial Biodiversity Priorities



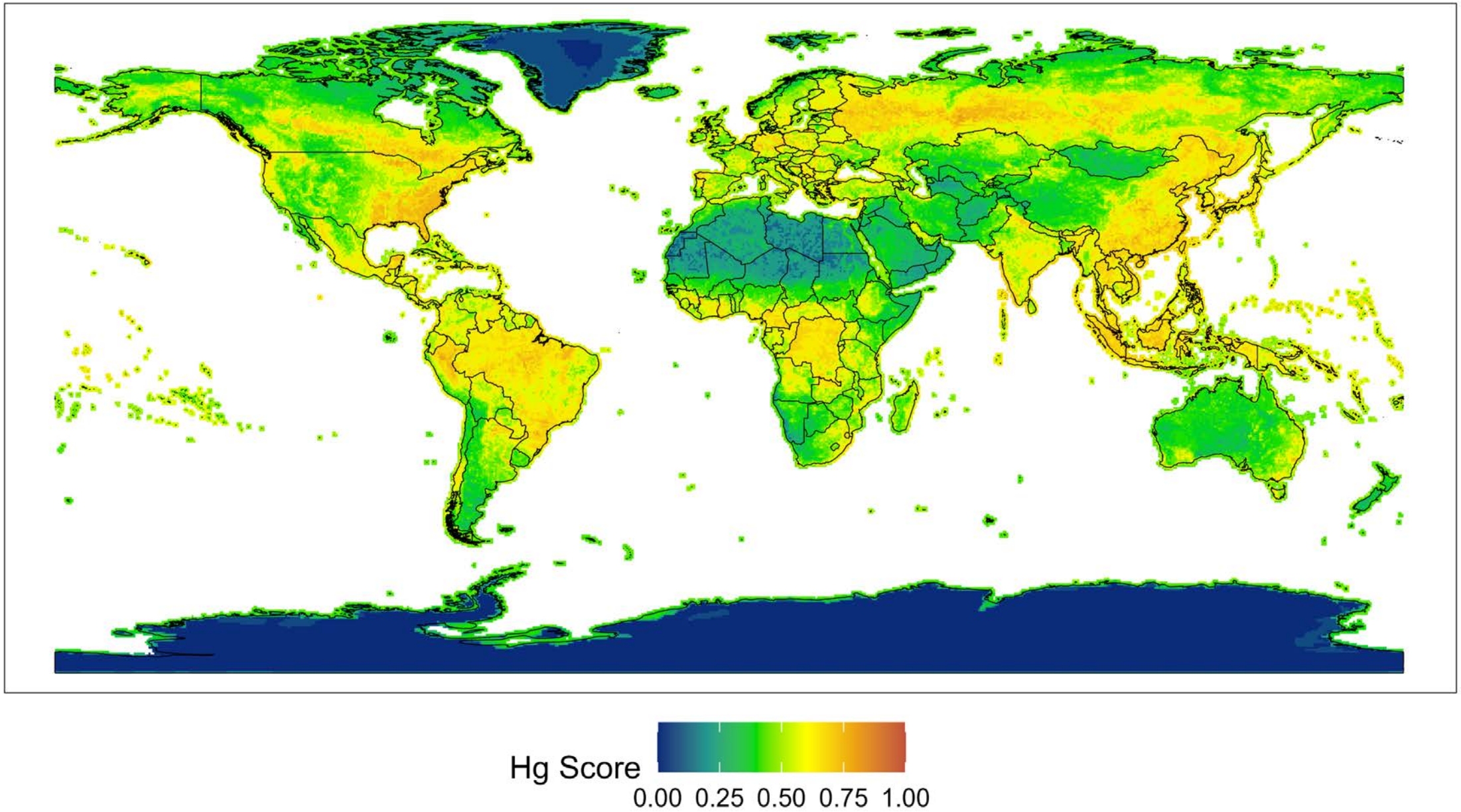
Freshwater Biodiversity Priorities



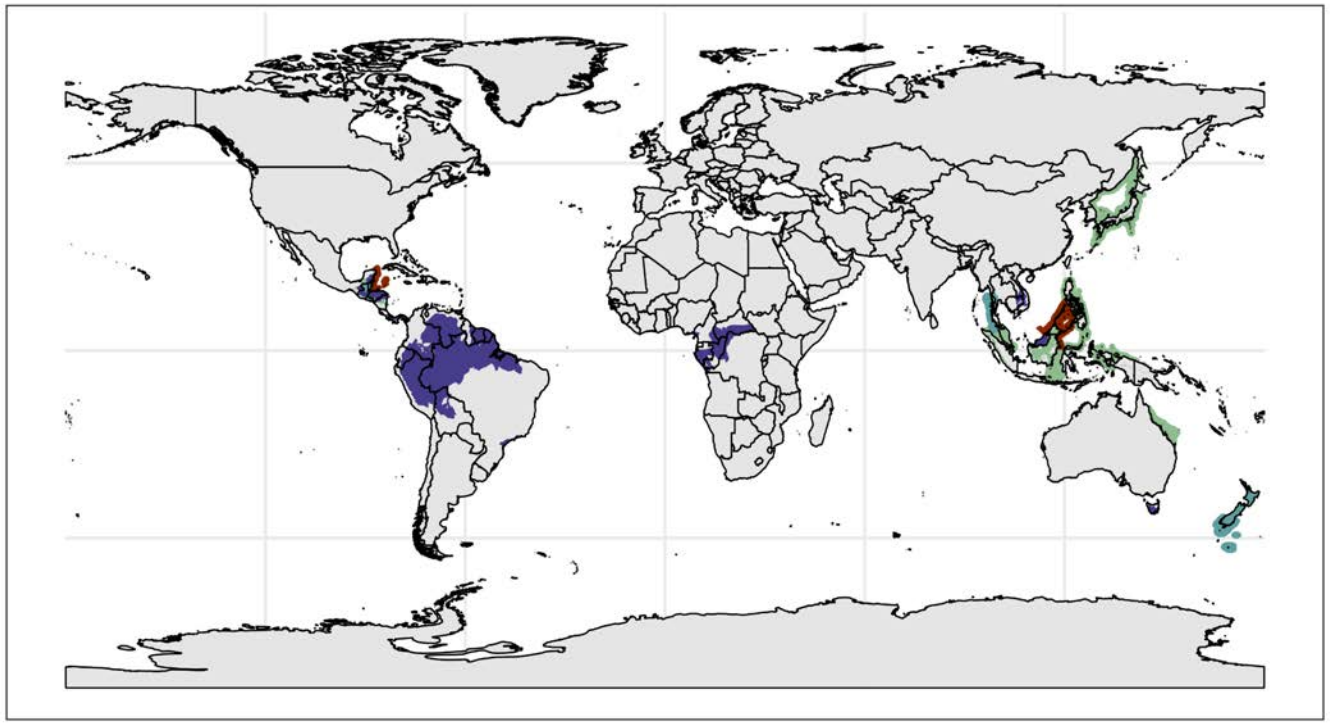
Coastal|Marine Biodiversity Priorities



Global Mercury Threat



Global Biodiversity Priorities



Overlap

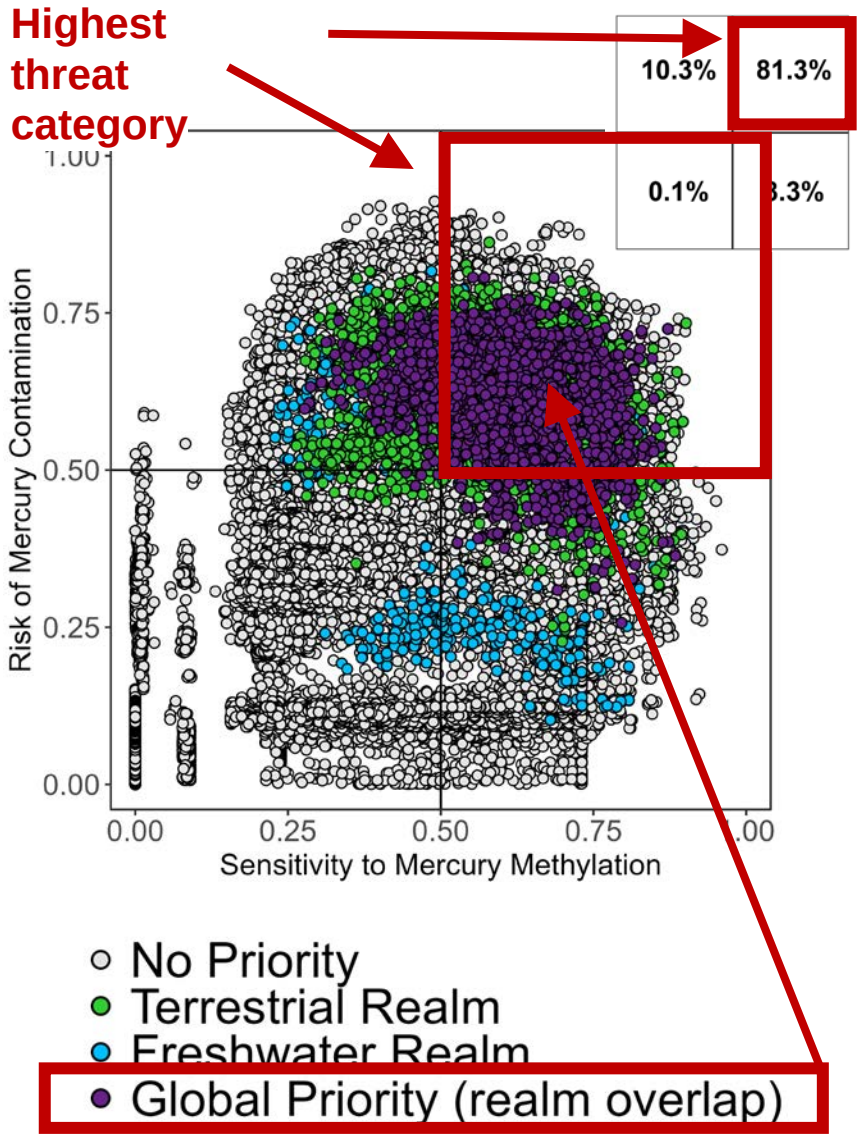
- Terrestrial & Freshwater Overlap

Adjacency

- Coastal/Marine and Freshwater adjacency
- Coastal/Marine and Terrestrial adjacency

Overlap and Adjacency

- Coastal/Marine with Terrestrial & Freshwater adjacencies



The vast majority (81%) of Global Biodiversity Priority Areas are in the highest mercury threat category
Biodiversity Priority Areas are significantly more threatened by mercury impacts than non-priority areas

Convention on Biological Diversity

MINAMATA CONVENTION ON MERCURY

Monika Stankiewicz

Minamata Convention Secretariat

16th ICMGP Cape Town 2024

International Conference on Mercury as a Global Pollutant 2024

Convention on Biological Diversity

MINAMATA CONVENTION ON MERCURY

Malgorzata Stylo

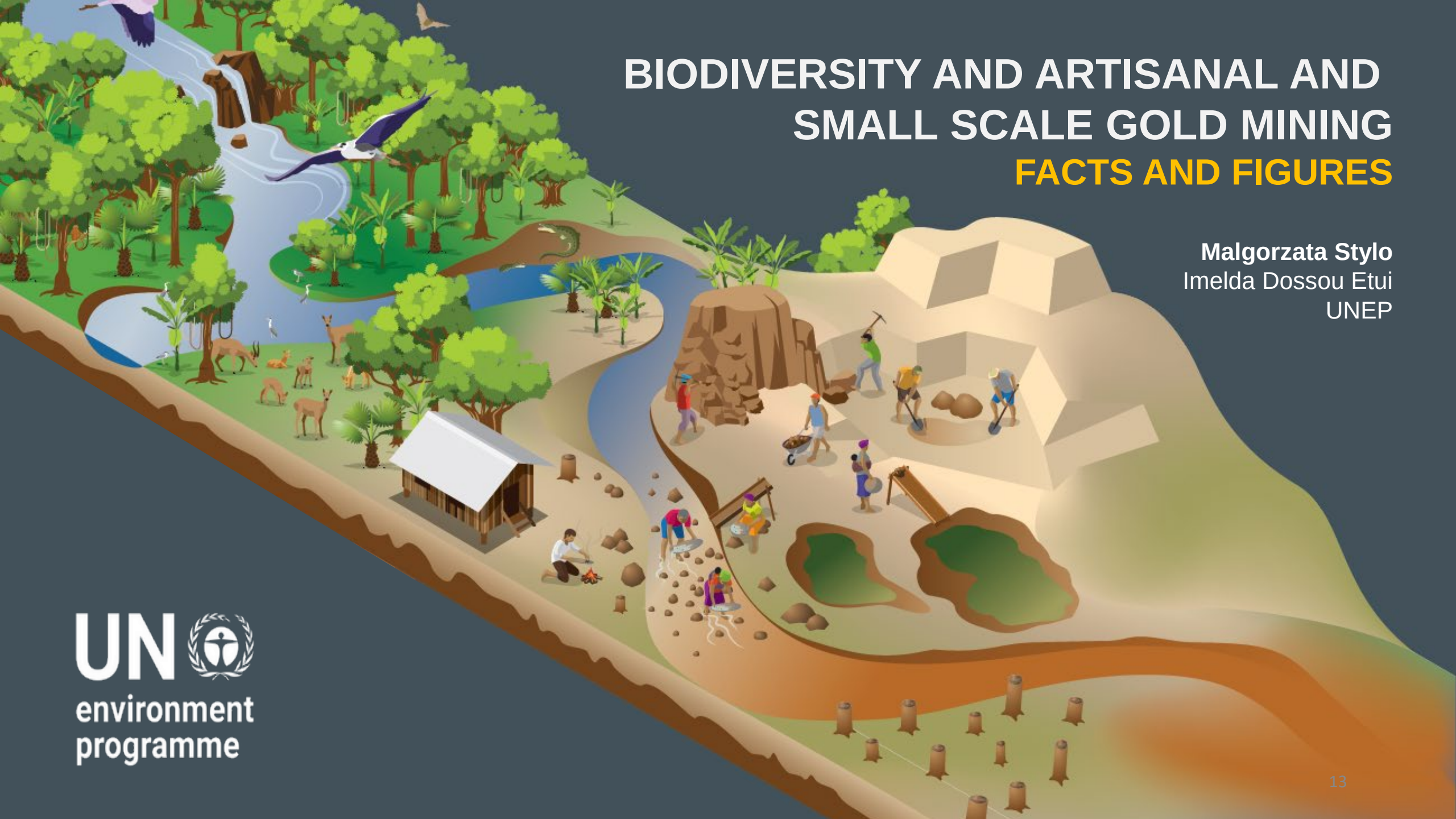
United Nations Environment Programme

16th ICMGP Cape Town 2024

Hg

UN environment programme

International Conference on Mercury as a Global Pollutant 2024



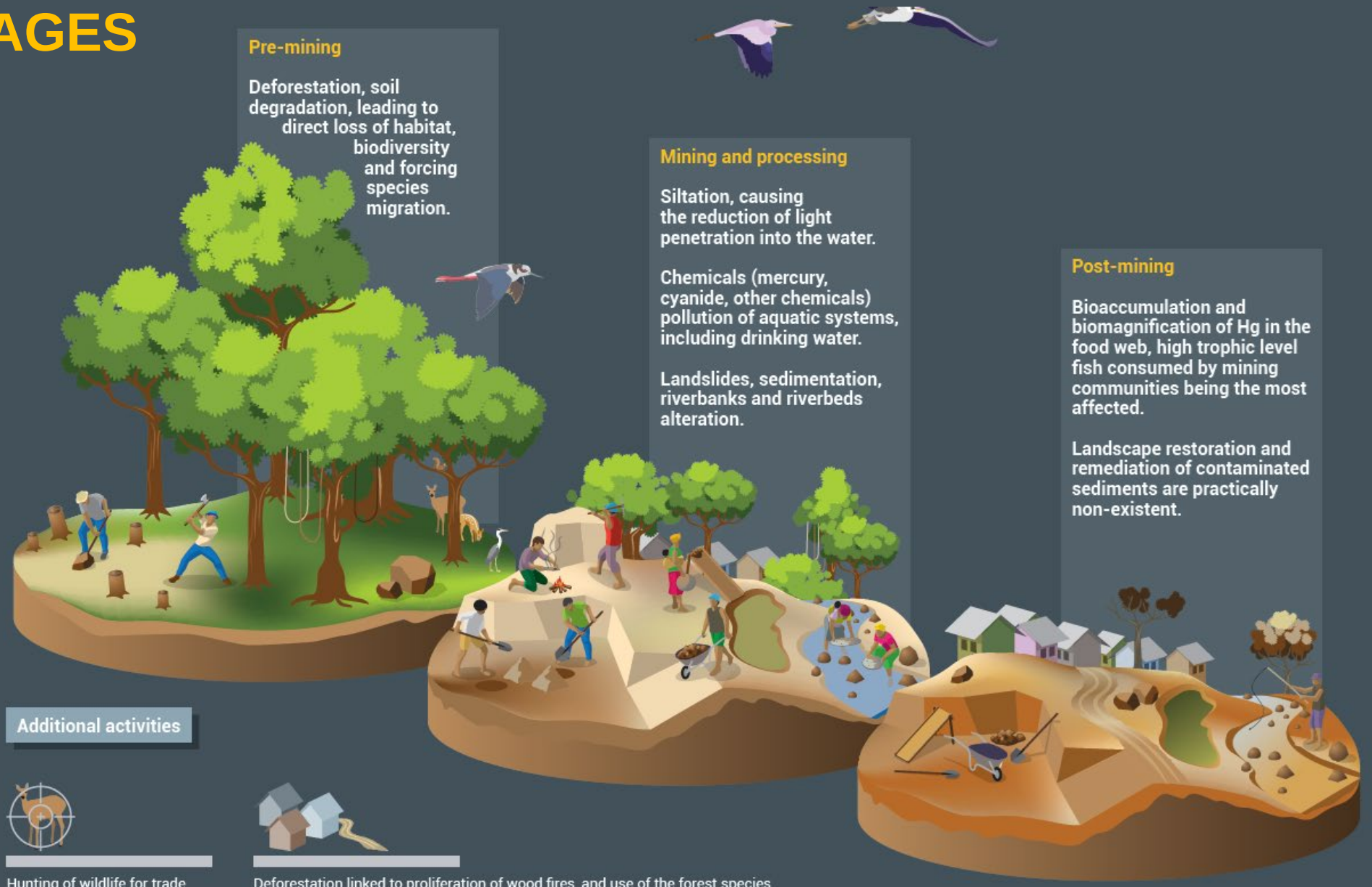
BIODIVERSITY AND ARTISANAL AND SMALL SCALE GOLD MINING

FACTS AND FIGURES

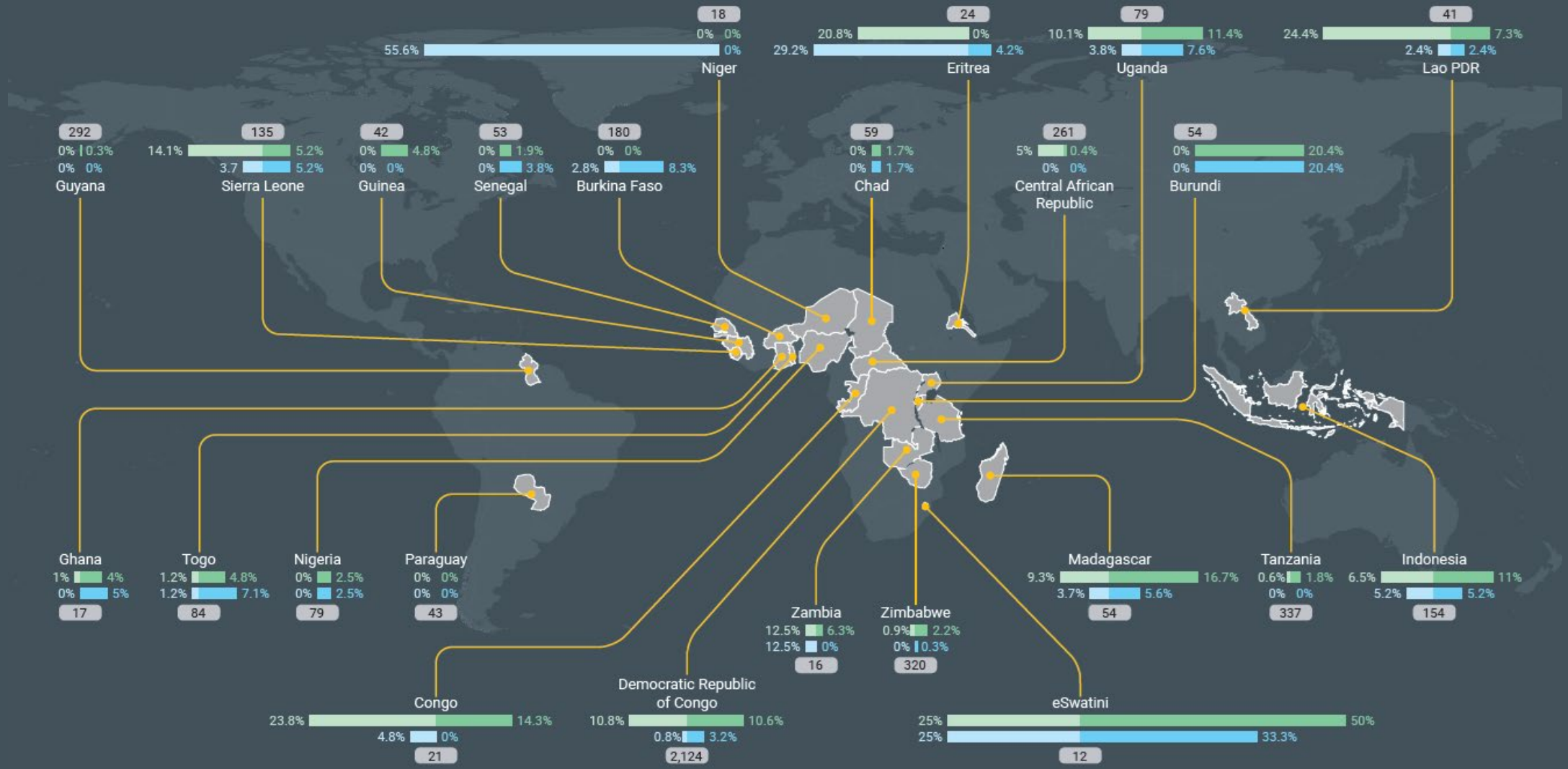
Malgorzata Stylo
Imelda Dossou Etui
UNEP

UN environment programme

BIODIVERSITY IMPACTS ALONG ASGM STAGES



ASGM IN KEY BIODIVERSITY AREAS** AND PROTECTED AREAS***



Legend

- % of ASGM sites in Key Biodiversity Areas
- % of ASGM sites in Protected Areas
- ASGM sites in 5 km buffer of Key Biodiversity Areas
- % of ASGM sites in 5 km buffer of Protected Areas
- Total ASGM sites per country

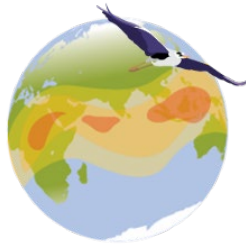
ARTISANAL AND SMALL-SCALE GOLD MINING AND BIODIVERSITY

-

SOLUTIONS

UN environment programme

STRENGTHENINIG THE SCIENCE



A better understanding of **mercury biogeochemical cycle in tropical ecosystems** is fundamental to better understand the **transport and fate** of mercury emissions from artisanal and small-scale gold mining.

Amphibians, freshwater fish, birds, and bats are particularly sensitive.

More in-depth knowledge of sensitivity, risk, and threats of **contamination to aquatic and terrestrial species by mercury** from gold mining is essential.

MAPPING

Use Remote sensing and other mapping tools as promising tools to access the extent of artisanal and small-scale gold mining overlap with the biodiversity hotspots and monitor restoration efforts.

RESTORING THE BALANCE

Promote **landscape restoration**, **rehabilitation** and **remediation of contaminated sediments** - to ensure sustainable and environmentally friendly closure of abandoned artisanal gold mining sites.

THE BIODIVERSITY PLAN

For Life on Earth

Kunming Montreal Global Biodiversity Framework

Target 7

Reduce Pollution to Levels That Are Not Harmful to Biodiversity

Convention on Biological Diversity

MINAMATA CONVENTION ON MERCURY

Luis Fernandez

Wake Forest University

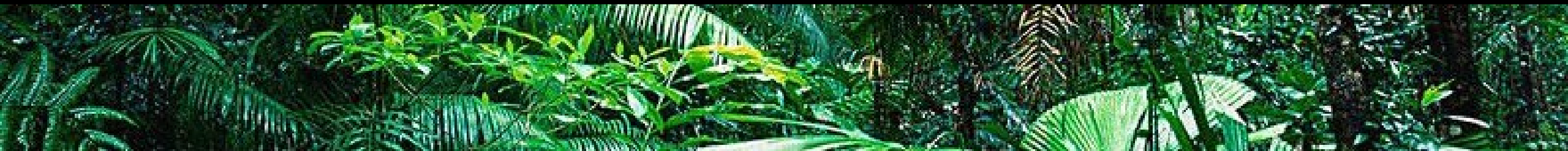
16th ICMGP Cape Town 2024

Hg

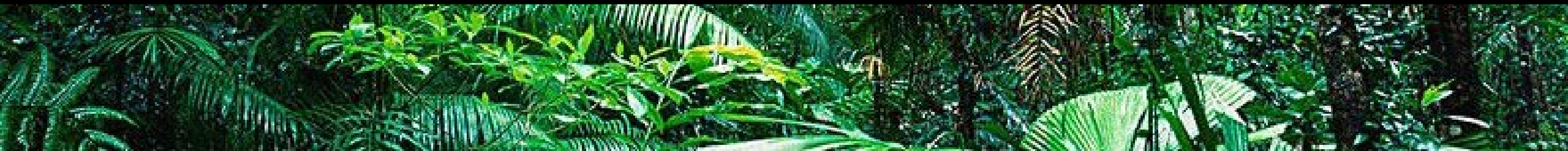
WAKE FOREST UNIVERSITY

International Conference on Mercury as a Global Pollutant 2024

What are the impacts of mercury on Biodiversity ?



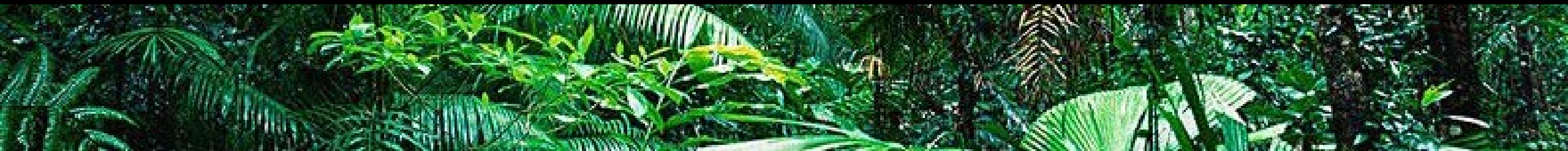
What are the impacts of artisanal gold mining on Biodiversity ?



Direct impacts of ASGM on Biodiversity

Areas directly experiencing mining activities

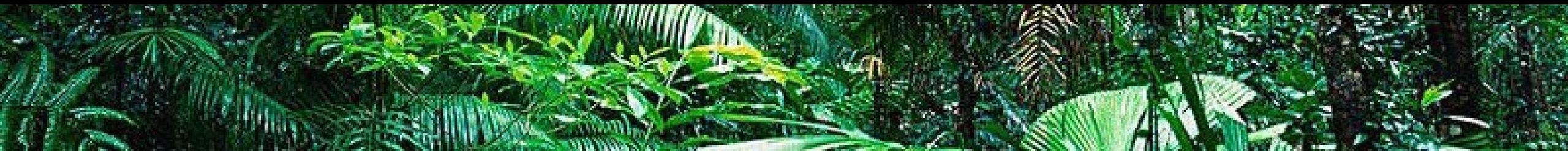
- Deforestation (forest loss)
- Habitat Loss → Defaunation (loss of fauna and wildlife)
- Soil Degradation
- Chemical Pollution
- Landscape Transformation



Indirect impacts of ASGM on Biodiversity

Areas adjacent / downstream / down-airshed / in footprint of ASGM

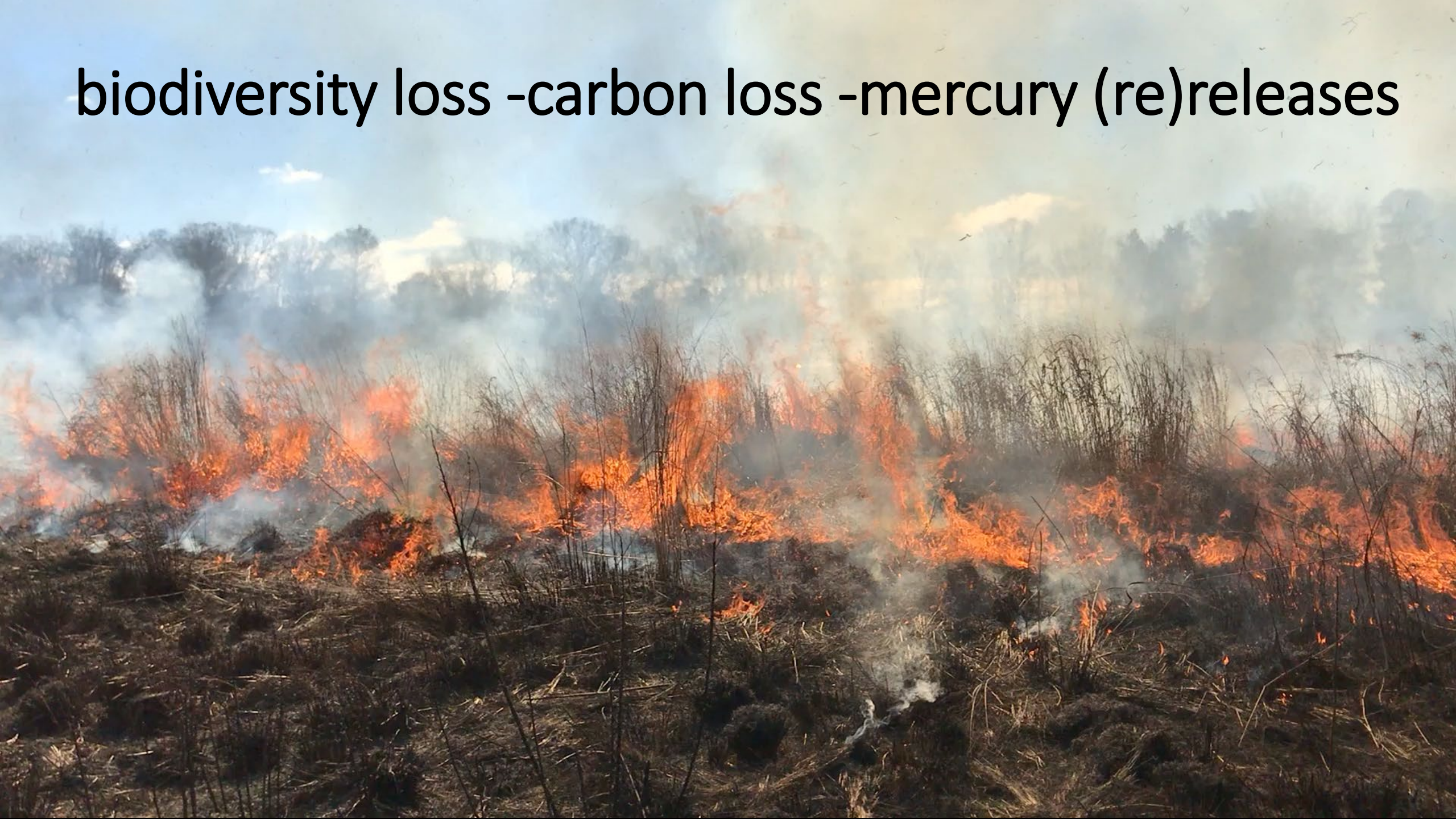
- Mercury / chemical pollutant transfer & redeposition
- Landscape fragmentation
- Forest degradation
- Climate change driven wildfire



Climate Change Effects

Wildfires frequency increases in ASGM damaged Forest Landscapes

biodiversity loss -carbon loss -mercury (re)releases



Convention on Biological Diversity

MINAMATA CONVENTION ON MERCURY

Claudia Vega

CINCIA

16th ICMGP Cape Town 2024

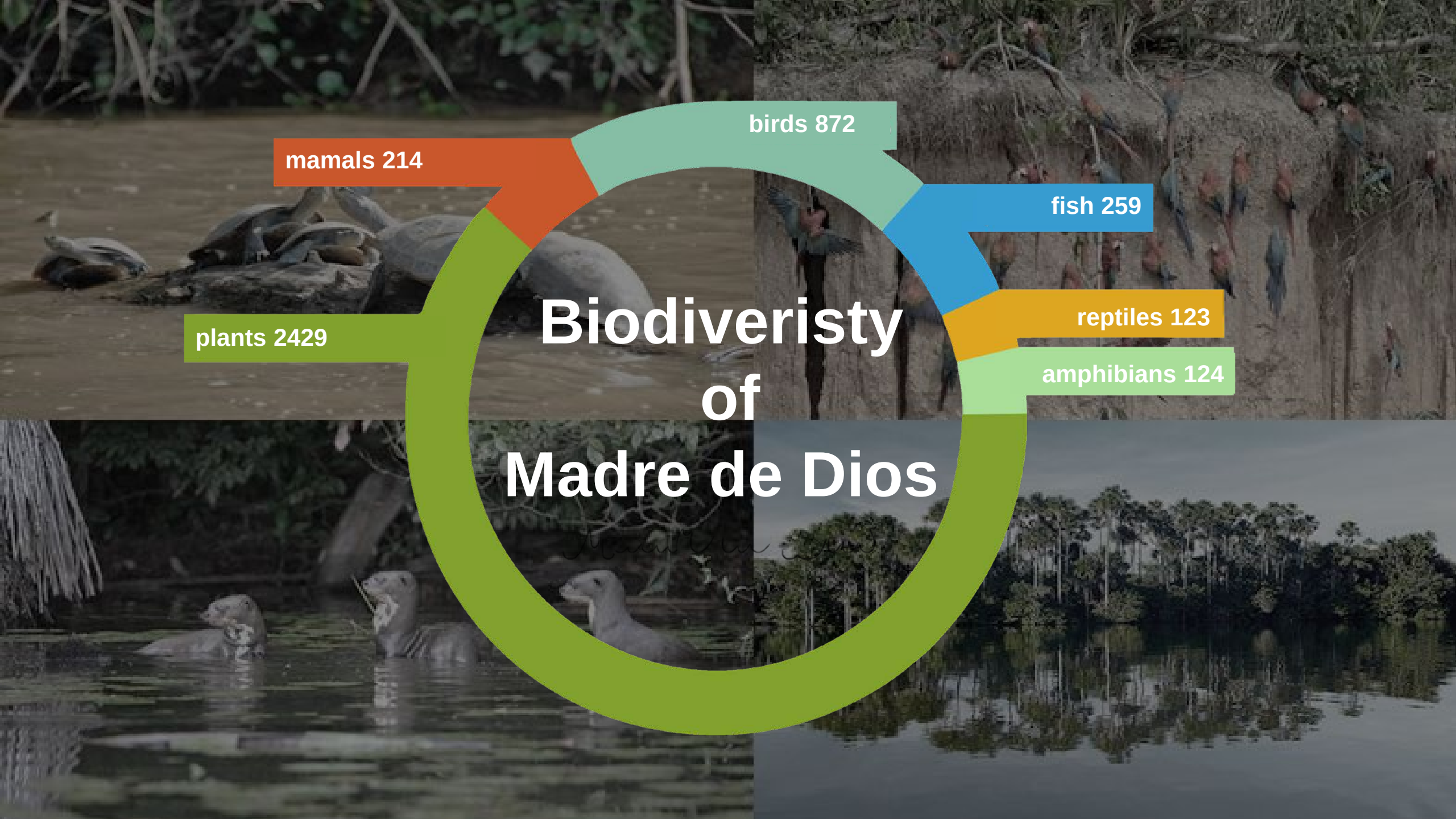
Hg

CINCIA

International Conference on Mercury as a Global Pollutant 2024

Madre de Dios, Peru

“Capital of Biodiversity”

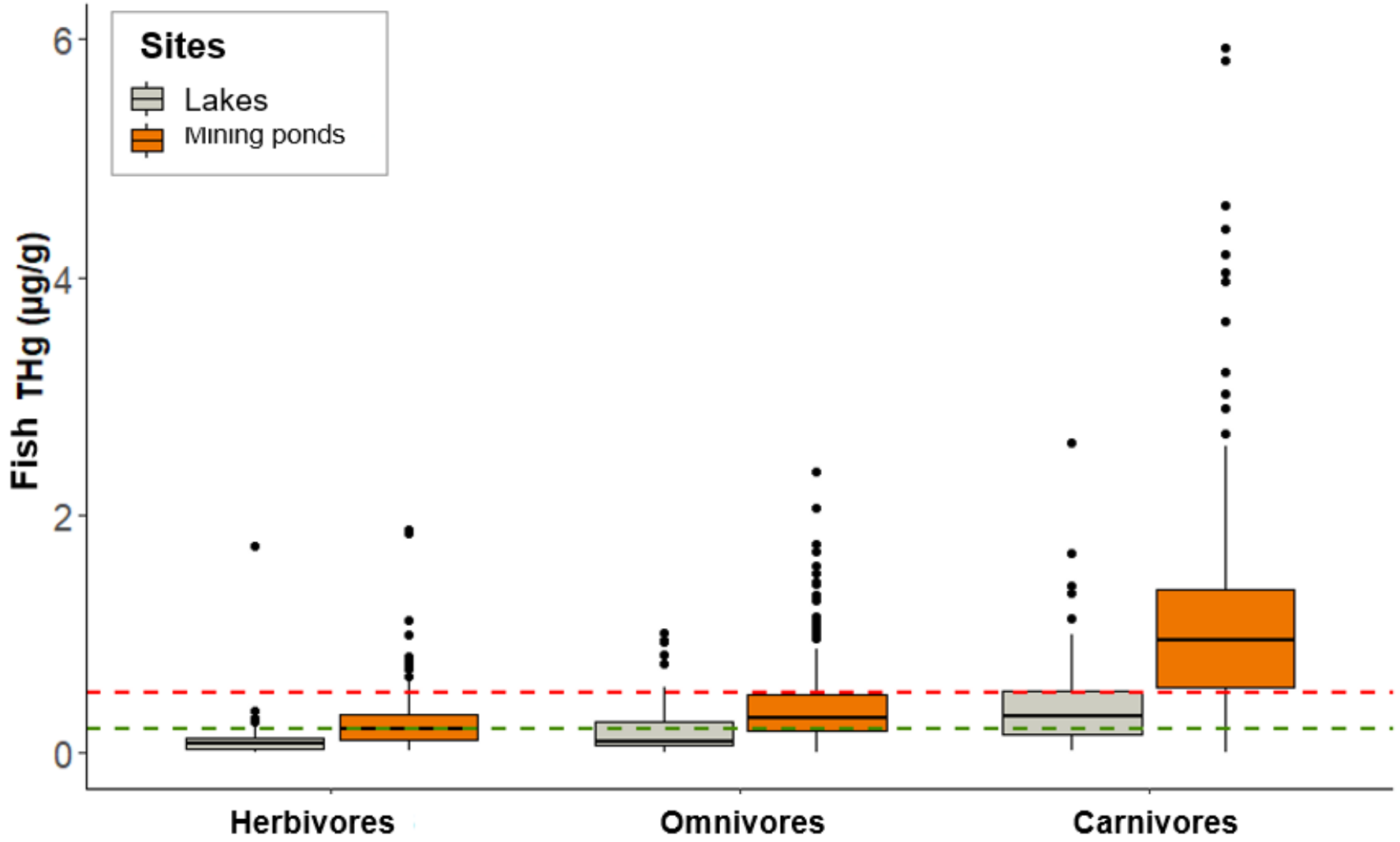

birds 872
mamals 214
fish 259
plants 2429
reptiles 123
amphibians 124
Biodiveristy
of
Madre de Dios

37% of forests destroyed by ASGM converted to mining ponds

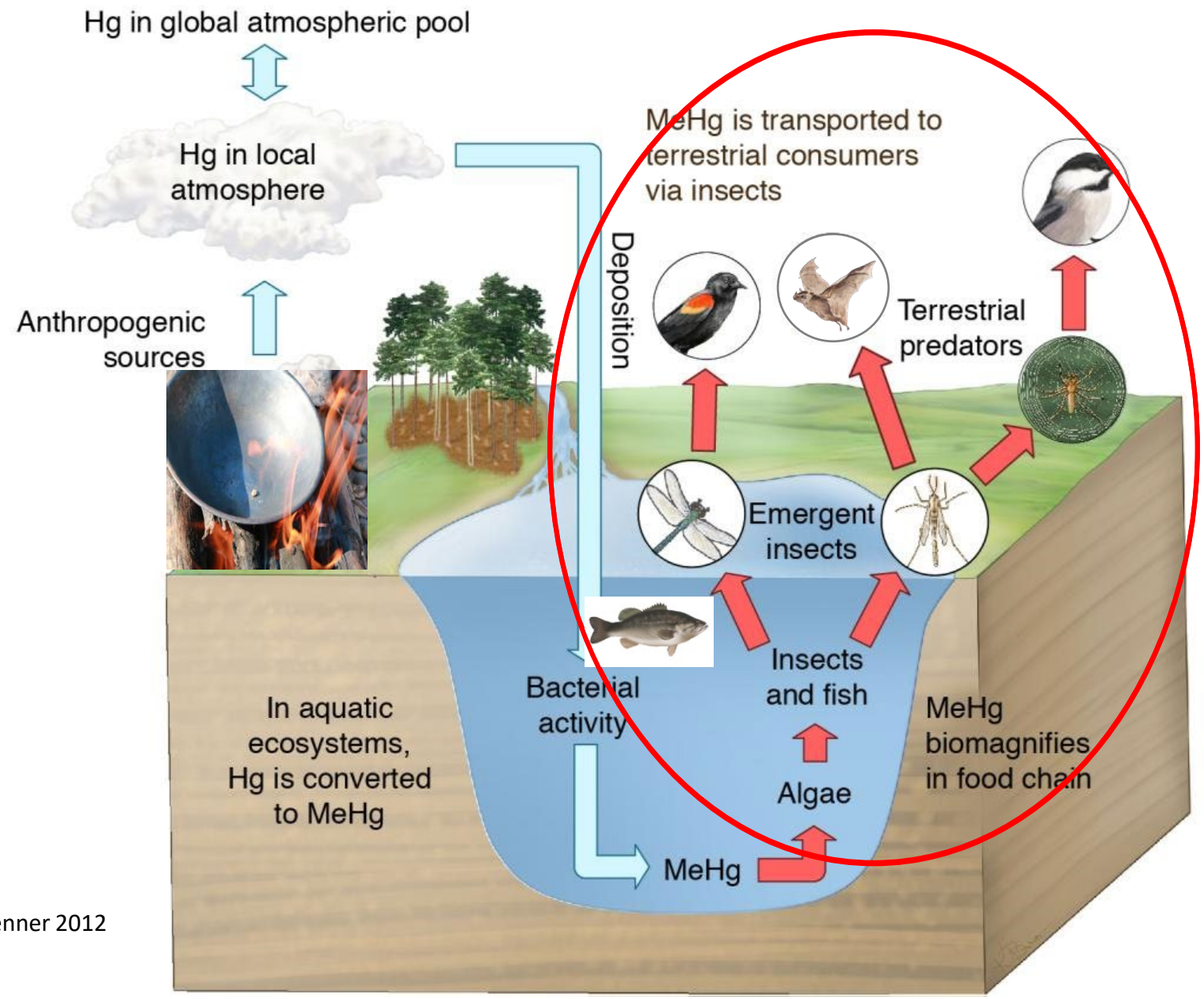
La Pampa Mining Zone

Mining ponds are not dead zones

Fish Hg levels: oxbows lakes vs mining ponds



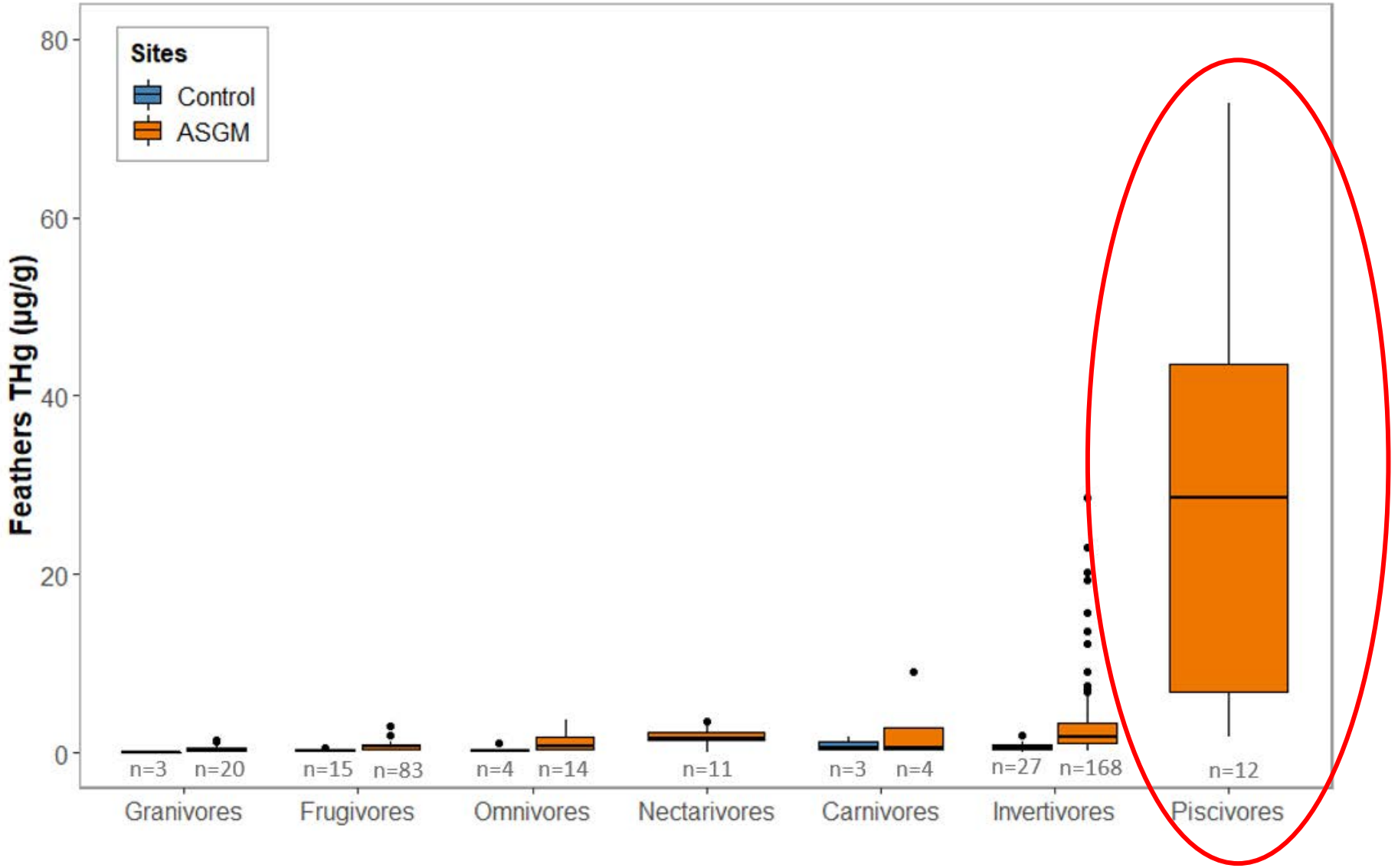
Mercury cycle



Mercury transfer

Adapted: Chumchal and Drenner 2012

Bird Hg levels by foraging guilds



CINCIA
CENTRO DE INNOVACIÓN CIENTÍFICA AMAZÓNICA

cinciaMERCURY

Amazon kingfisher *(Chloroceryle americana)* 72.8 ppm

Giant River Otter *(Pteronura brasiliensis)*

Convention on Biological Diversity

MINAMATA CONVENTION ON MERCURY

Allison Aldous

The Nature Conservancy

16th ICMGP Cape Town 2024

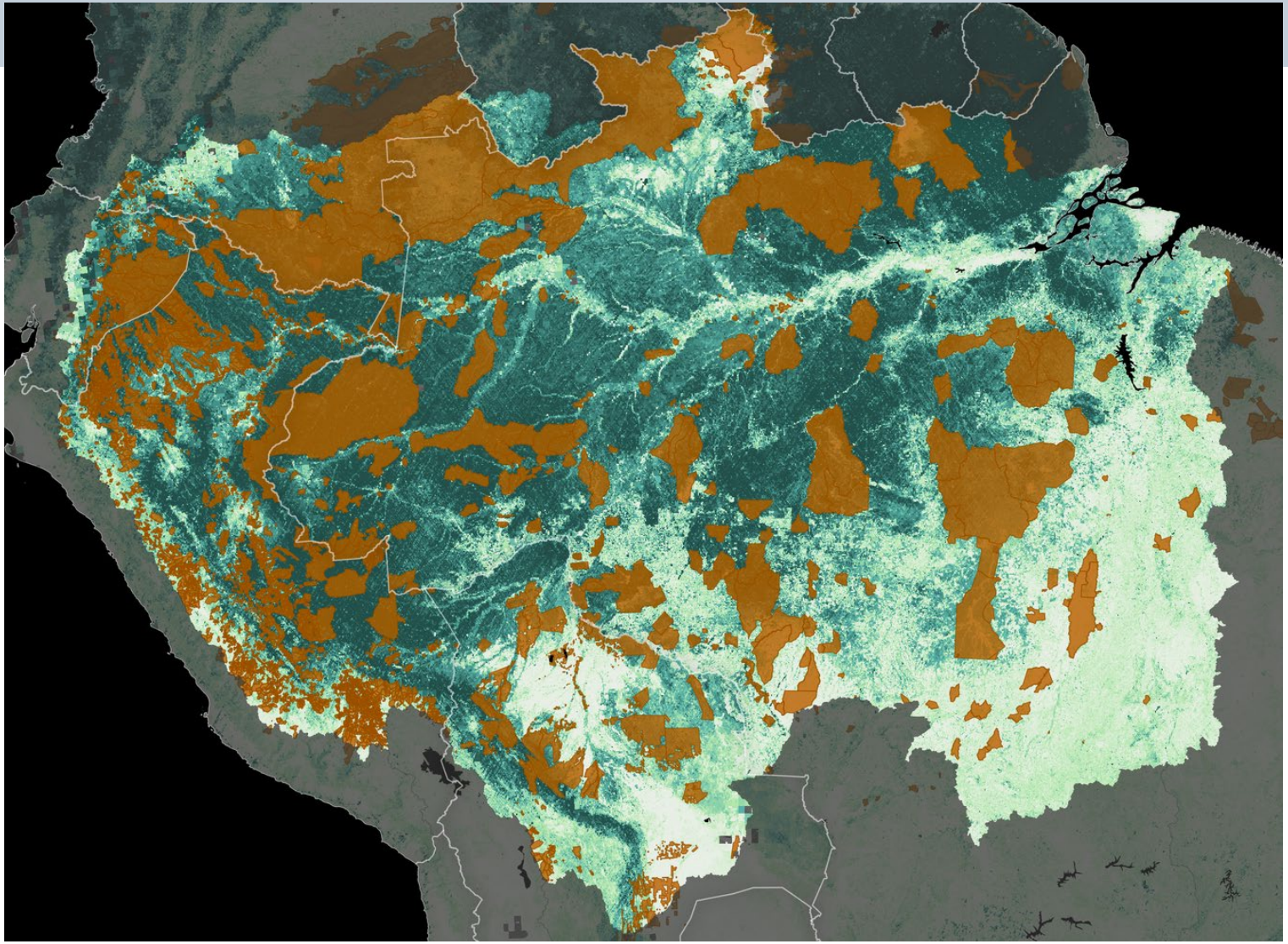
Hg

International Conference on Mercury as a Global Pollutant 2024

The Nature Conservancy

The Amazon is home to…

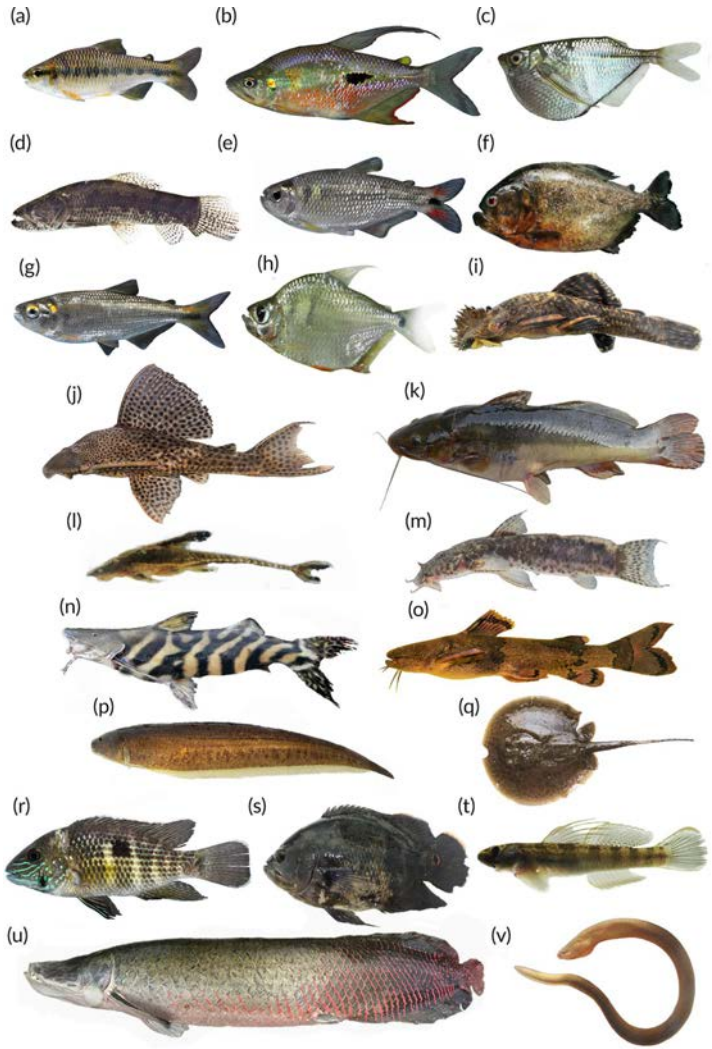
- 1/3 of the world's species
- 1/4 of the world's freshwater
- 1/5 of the world's forests
- 1.7 million people
- ~375 Indigenous nations
- 24% by area of the Amazon



© NASA Earth Observatory. Available at: https://earthobservatory.nasa.gov/images/151921/indigenous-communities-protect-the-amazon

Importance of fish biodiversity and Indigenous peoples

- Protein and micronutrients
- Culture and traditions



IP-led fluvial reserves