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Conservation of Aqua Biodiversity in South America

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Description

South America's fish faunas are the most diverse on the planet, with current estimates of over 9100 species for continental fresh waters and nearshore marine waters combined, accounting for approximately 27% of all fishes worldwide. Furthermore, over the last decade, more than 100 new species have been described each year. There are currently approximately 5160 freshwater fish species described for the continent, which are classified into 739 genera, 69 families, and 20 orders. This figure represents roughly one-third of all freshwater fishes worldwide, compressed into about 12% of the Earth's total continental surface area.

The marine fish fauna includes over 4000 species, accounting for approximately 23% of the approximately 17,300 current valid species of marine fishes worldwide, and is spread across approximately 30 000 km of South American coastline ranging from approximately 12N to 55S, and from 34 to 81 W, or approximately 88% of the world's total continental coastline. South American fish faunas evolved over a period of more than 100 million years, with the majority of lineages tracing back to Gondwana and the adjacent Tethys Sea during the formation of tropical rainforest and coral reef ecosystems.

Tropical South America is the only region on Earth that has avoided the mass extinctions and biotic turnovers associated with Cenozoic climate cooling, the formation of boreal and temperate zones at high latitudes, and aridification in many places at equatorial latitudes. As a result, tropical South America has the greatest diversity of terrestrial vertebrates, vascular plants, ants, and many freshwater taxa of any region of comparable size on the planet. Conserving South America's remarkable aquatic habitats and fishes is becoming increasingly difficult in the face of the 21st century's rapid anthropogenic changes. Continued habitat loss due to land use changes, hydroelectric damming, water pollution, mining, urbanisation, and poor agricultural practises, in addition to overfishing, is causing rapid declines and threatening the extinction of many species.

This page provides a review of the evolutionary history of the region and its fish faunas, as well as an updated estimate of the variety of freshwater fishes on the continent. The primary habitats, major river basins, and marine ecosystems are also defined, and the significant risks to fishes and their habitats are examined.

South America's freshwater and marine fish faunas are the most varied on the planet, with current species richness estimates exceeding 9100 species. Furthermore, throughout the previous decade, at least 100 new species have been described each year. There are now around 5160 freshwater fish species, with an estimated total variety of 8000 to 9000 species based only on the freshwater fish fauna. South America also contains over 4000 marine fish species.

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South America's mega-diverse fish faunas evolved over more than 100 million years, with most lineages reaching back to Gondwana and the neighbouring Tethys Sea. This great variety was preserved in part by avoiding the catastrophic extinctions and biotic turnovers associated with Cenozoic climatic cooling, the creation of boreal and temperate zones at high latitudes, and aridification in many equatorial regions.

The continent's fresh waters are split into 13 basin complexes, which include big basins consolidated as a single unit and historically related neighbouring coastal drainages, as well as smaller coastal basins grouped together based on biogeographic criteria. Each basin complex's species diversity, endemism, notable groupings, and level of knowledge are detailed. The marine ecosystems of South America, both coastal and oceanic, are also characterised in terms of fish diversity, endemism, and the current level of knowledge. Because to substantial land use changes, hydroelectric damming, water diversion for irrigation, urbanisation, sedimentation, and overfishing, 4–10% of all fish species in South America threaten extinction, mostly as a result of habitat loss and degradation [1-5].

Future Prospective

These numbers indicate that the conservation situation of South American freshwater fish faunas is better than in most other parts of the world, but marine fishes are just as vulnerable. Conserving South America's outstanding aquatic ecosystems and fishes is an increasing problem in the face of the 21st century's fast human changes, and it demands the attention of conservationists and policymakers.

Conflict of Interest

None.

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