

## **PP236 The importance of the Pacaya Samiria Reserve, Peru for wading birds**

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The Ciconiiformes comprise birds that are often large and conspicuous, including storks, herons, egrets and cormorants as well as species that are relatively small and highly secretive, such as many bitterns. The wading birds in the Samiria River basin of the Pacaya-Samiria National Reserve are a particularly important assemblage. The conservation and management of the fisheries in the Samiria River has resulted in a very high density of wading birds in the lakes, channels and rivers. The Samiria River fluctuates by approximately 8 metres between the high water season and low water season. During high water fish enter the flooded forests and remote upper reaches of the river. However, during the low water the fish migrate towards the mouth of the river, many existing into the main river channel of the Amazon.

The fluctuations in fish abundance directly influence the fish feeding wading birds. During the high water they are scattered around the entire reserve, often in the upper reaches or smaller water bodies. However, during the low water season the wading birds follow the fish migrations with many being concentrated around the mouth of the Samiria River. Indeed, at the peak of the low water season 10's of thousands of wading birds concentrate in the delta of the Samiria River.

The research at the Samiria River sites in the Pacaya-Samiria National Reserve will be conducted during the low water season. Comparisons of the abundance and species composition will be studied to determine the movements and habitat uses of the different species. The Samiria River has a greater concentration of wading birds than other rivers in the region and the research is evaluating the links with the fish abundance and intact habitats within the reserve. In addition, multi year analyses are being conducted to determine whether the populations of wading birds are increasing as the fisheries management improves.

Research will be conducted at both an upriver site and at the mouth. At both sites macro habitats will be surveyed including lakes, channels and the main river. In addition micro habitats will be recorded, along with activity patterns and daily movements.

The Amazon basin is going through dramatic climate changes that will impact the largest rainforest on Earth. In 2010 the water levels of the Amazon River were at a historic low resulting in extreme dry conditions. In 2009, the same river was at a historic high, flooding huge area of Amazonian forests. More recently in 2011, the high water was again at historic highs, and then drained to historic low levels. Each year the Amazon River goes through seasonal changes between the flooding period from December to June and the low water period between July to November. However, these normal seasonal changes are now becoming more intense, which is impacting the wildlife and local people.

Research on wading bird populations is being conducted to understand how the ever increasing climatic changes are impacting their ecology and populations. The wildlife of the Samiria River lives in an ecosystem that is driven by the large seasonal fluctuations occurring between high and low water seasons. The ecology of the aquatic and terrestrial wildlife revolves around these seasonal changes in water level.

The aquatic wildlife is affected by the large seasonal inundations. During the flooded periods

the fish enter the water laden forests and feed on the abundance of vegetative and animal production, especially the abundance of fruits, invertebrates and other living organisms trapped in the annual floods. During the flooded period many fish populations reproduce within the inundated forests. The wading birds that feed on fish have a more difficult time during the floods, since their prey is more sparsely distributed throughout the large expanses of the flooded forests. When the waters recede during the dry months, fish populations become condensed in the reduced lakes, rivers and channels with ever increasing competition and predation. During this period many fish populations, especially the young fish born in the flooded forests migrate out of the smaller rivers and into the larger rivers. It is during this period that large flocks of wading birds, especially egrets and cormorants seasonally migrate to the Samiria River to exploit the large fish migrations.

The normal cycles in the Amazon forests are now being disrupted by the extreme flooding and drought events that are occurring. The flooded forests are particularly important at understanding the impacts of climate change in the Amazon, since the aquatic and terrestrial interface between high and low water seasons makes this habitat sensitive to greater seasonal variations. The wading birds will help determine the impact of the climate change, since any fluctuations in the fish production will also impact the wading bird populations.

## **Methods**

River transects of 5 km will be used to census the wading birds. Abundance will be recorded as the number of birds sighted per km of river censused. Data will be divided between flying birds and perched birds. On the large lakes and main river only one side of the water body will be censused at a given time. However, on the smaller channels both sides will be censused together. The main river channel has a width of around 50m, and the censuses will concentrate on only 25m on one side at a given time. The smaller channels have a width of around 25m and thus will be censused on both sides at the same time.

Comparative analyses will be conducted between the upriver site and the mouth. Analyses will involve a comparison between species composition, relative abundance, macro habitat differences and micro habitat differences, along with activity patterns and movements.