UNDERSTANDING GOVERNANCE OF NATURAL PROTECTED AREAS THROUGH SOCIAL NETWORK ANALYSIS IN THE NATIONAL NATURAL PARK AMACAYACU, AMAZONAS COLOMBIA

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ABSTRACT

Colombia has a National System of Protected Areas (NSPA) that includes protected areas in national, regional and private territories; One of the strengths of the NSPA is the System of National Natural Parks (SNNP) that consists of 59 parks, that represents 11.27% of the Colombian continental land. 26 of those parks have overlaps with territories of indigenous or afro American communities.

National Parks of Colombia (NPOC) is the institutions that manages the SNNP and the NSPA. NPOC has the main responsibility of managing the system not only with the purpose of conserving the natural resources of the protected areas, but also the traditional cultures located in the protected areas, also contributing to their sustainable development.

NPOC coordinate with other governmental institutions from national, regional, and local levels that have direct relation in their territories with the SNNP. In this way, NPOC promote regional and sectorial environmental conservation policies, articulated with national, regional and municipal development plans.

The SNNP, has 10 protected areas in the Amazon region, from those seven have overlaps with territories of indigenous communities (IC). Each IC has, or is currently developing, its own management plan for its territories and resources. IC face difficulties due overlaps of

their territories with other institutions that have jurisdictional functions over their territories. These overlaps generate difficulties for managing resources since interests and objectives of each institution can be contradictories among them, often generating conflicts with the traditional indigenous authorities and other institutions

NNPOC in order to reduce the conflict and accomplish the conservation objectives of the SNNP has developed Co-Management (CM) strategies for including communities as active subjects of the conservation. CM strategies include the participation of communities in conservation activities through strategies of sustainable management of resources with the accompaniment of NPOC and NGOs as guarantors of the continuity of process.

This research focuses on the National Natural Park Amacayacu (NNPA) that is located in the south Colombian amazon, between the jurisdictions of Leticia and Puerto Nariño. This park has overlaps with four indigenous territories from different ethnicities, which have their own management plan for their territories. The NNPA has developed an institutional and collaborative proposal of conservation with the communities that recognizes the indigenous use and management of their territories.

Different studies have analyzed this process using ethnographic methods and qualitative analysis, however, none of this research has used a quantitative approach that identifies the structural properties of the CM of the Park. Analyzing the structural properties of the CM strategy in the NNPA, not only will bring enough information or improving the CM strategies, but also for learning from it and replicate it in another Parks of the SNNP.

Since CM depends on social relations, analyzing these structures and its performance, it is possible by using a social network analysis (SNA) to analyze the relations among a set of actors and how those affect the decisions taken for them. In this way, this research uses a

SNA for describing the current network governance structures of the NNPA and establishing three networks that show the sharing and collaboration processes between institutions and indigenous communities. In addition, this research uses quantitative analysis in each network structure for identifying underlying properties of the networks structures and the institutions related to it.

To get the relational data necessary for identifying the networks, 27 interviews were done to institutions related to the NNPA, from those six to IC. Three networks, Knowledge, Resources, and Collaboration were analyzed, using the software Pajek, the analysis was done in two different levels related to CM. First, at network level to understand overall characteristics of the network, and second, at agent level to understand positions of institutions in the network. In addition, an Exponential Random Graph model (ERGM) was done for understanding the creation of connections among institutions and IC.

At network level, knowledge network has the biggest number of links among institutions and is the less centralized of the three. In contrast resource network has the lowest number of links and the highest centralization, finally collaboration network situated in the middle of the other two networks regarding number of links and centralization. At agent level in both knowledge and cooperation there was not obvious institutions that appeared as between central connecting different subgroups inside the network, again, in contrast, in resources network were evident between central institutions.

Results from the ERGM showed that indigenous communities have a significant likelihood of creating cooperation links with indigenous association, as well there is a significant likelihood of creating links when two institutions are in regional level. In addition, the ERGM

revealed that institutions are more likely to create a cooperation link when they share common partners.

The identified networks showed the institutional complexity related to the CM of the NNPA. Each network displays its own particularities and provides valuable information for identifying structural and agent characteristics. In addition, the analysis revealed that the CM of the NNPA has strengths in the actual collaboration process between indigenous communities with overlaps and the management of the NNPA. However, the analysis also showed lacks of governance in the areas surrounding the NNPA, since indigenous communities that do not have overlaps with the Park are not connecting with resources or knowledge about conservation.

Key words: Natural Resource Governance, Social Network Analysis, Protected Areas, Conservation Strategies, Amazon Rain Forest, Multilevel Governance, Co-Management, Adaptive Co-Management