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GPS/DNA Elephant Survey: Nigeria Case Study OML 11 and OML 52 Ikuru NDES Study Zone

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Abstract:-Physics the fundamental Science, have widespread application in field monitoring, satellite imagery, Global positioning system, GPS tracking, medical diagnosis through Deoxyribonucleic Acid (DNA), Magnetic resonance imaging (MRI) for mineral exploration, Ultra-scan and diagnostic radiology for the medical sciences. The attempt this time is to introduce the use of GPS/DNA in the study of wildlife census and migration, in the oil and gas exploitation field of Nigeria. This is using the Andoni elephants as case study. The process involve picking the dungs or sand of the foot print and analyzing for DNA. The study astonishing reveal that while the other traditional method of observation recorded the elephant population to be 40 herbs ±5, by the Staowood (1981). The DNA study record is 9 herbs ±2 in 2002 speedy under pronatural Nigeria. A correlation with Bebort claim of his visits to Ilotombia Andoni in July 1700 shows the elephants takes off from March each year in the East Ikuru and migrates through the 27km length "124km^2" Ngo barear island to reach Ilotobi in the west by July-August and takes a return journey back Ikuru in November. This correlates with the Yankari games migration experience, following seasonal watershed.

I. INTRODUCTION

There are lot of publication on oil and gas exploitation impact, fisheries and wildlife management across the world. These include Greenpeace (2001), SPDC (1995), Anderson (2005), Human right watch (1999), CNN (2006), Nwilo and Olusegun (2007), Merck (2002), NFL (1996), Alexa (2006), Molles(2005), WWF (2006), Fuggle(2004), Human Right Watch (2007), Essential Action (2001) and Nte (2017). The focus this time is to take a holistic overview of the oil and gas exploitation impact on the wildlife of OML 11 and OML 52 using the Andoni Elephant as case study. The study is participatory field evaluation PFA Chambers 1994, NDES 1997. When the conventional survey phase yielded doubtful results. The study team proceeded to phase II which is more like an adventure into the unknown with astonishing results which are both scientific as well as literally on elephant invasion of Ikuru Town.

II. BACKGROUND TO THE STUDY

Though the Niger Delta, at one point in time, must have harboured a large population of elephants but all that remains presently is a small population on Andoni Island (Powell, 1993). Another population was discovered in Taylor Creek in 1989, but attempts to initiate a conservation effort for the area failed, and this population is now also thought to be extinct (Were, 1991).

Elephants have played an important role in the shaping of West African rain Forest (Hawthorne & Parren, 2000). Moreover, a recent study indicates that the West African elephant represents a third genetically distinct population which has dwindled to only 12,000 individuals (Woodruff & Eggert, 2002). Since West African elephants are under such severe pressure any realistic possibility that can result in the protection of the few remaining populations should be undertaken NDES (1997).

A. Location of Study Site

Andoni Island is a coastal barrier island that covers about 124km^2. These coastal barrier islands are large sand banks located where the Niger Delta meets the Atlantic Ocean and are covered with fresh water forest. Away from the beach the perimeter generally consists of a narrow bank of mangroves, but the interior consists of swamps fed by rain water supporting freshwater swamp forest with an annual precipitation of about 4000mm ±200.

The Andoni elephant population has been estimated to consist of approximately 30 animals.' Due to the difficult terrain it has been complicated to undertake a survey that allowed for a more accurate estimate. At the same time the island's population, as well as oil industry related activities are increasing rapidly. As a result, the number of elephants being killed is increasing fast. This study, therefore, aimed at completing two tasks:

- Estimate the elephant population size.
- Develop a conservation plan if population size is viable.

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III. RESEARCH METHOD

Given the difficulty of the terrain, a traditional survey on foot of the forest in order to determine the Andoni Elephant population proved to be impossible. Not only is the fresh-water swamp forest extremely difficult to negotiate, the elephants due to continuous human harassment have also become dangerous and close contact should be avoided.

For this reason a different approach was selected; the collection of dung samples for DNA analysis. Indigenous hunters were selected from eight different villages:

- Pipeline (Oyorokoto) N04° 27.368' E007° 20.192';
- Ilotombi Town N04° 28.828' E007° 22.426';
- Egwede Town N04° 29.110' E007° 23.999';
- Ngo Town N04° 29.039' E007° 25.079';
- EkedeTown N04° 28.843' E007° 26.069';
- Ikuru Town N04° 28.936' E007° 29.642';
- Okorobo-ile Town N04° 28.708' E007° 32.743';
- Otu-Oyo/Ibot Okpon N04° 27.659' E007° 34.709';

These cover the whole length of Andoni Island. Each hunter was trained in the collection of dung samples and the use of a GPS allowing for recording the location of the dung samples rot only to map the movement of the elephants but also to avoid collection of duplicate samples from the same source.

The centre for Environmental Research and Conversation at Columbia conducted genetic analyses of 30 dung samples.

IV. RESULTS

The coordinates for dung locations indicated that the movement of the elephants was restricted to the most eastern third of Andoni Island strongly suggesting that there is only one herd remaining on the Island which is checked by urbanization.

The DNA analysis identified 30 individuals genotyped for 7 microsatellite DNA loci, but not consistently because individuals did not amplify for the same microsatellite locus. As a result the best estimate would be a remaining population of 12 elephants, because the confidence intervals are still large. Some further laboratory analysis is being conducted at the moment. It is safe to estimate that the Andoni Elephant population consist of 8 +/-6(2-14 individuals). The most recent estimate from the literature is six elephants, which is basically consistent with our results.

A. Validation

Interviews with the hunters indicated that the Andoni indigenes are afraid of the elephants. In the past, when the elephant population was much larger, it was basically impossible to f urn on Andoni Island. The elephants visited farms and what was not eaten was destroyed by their activities. Now that the population has been significantly reduced more people are farming but this may also be the result of a growing population and / or diminishing fish catches. As a result, the idea of protecting the elephants is not very popular even though there appears to be some pride over the fact that the remaining population of elephants lives on their island.

The better sections of forest that have seen relatively little logging are remote and very difficult to access. Most of the forest is water logged the year round. This and the dense vegetation and many roots make it extremely difficult to move around. This is most likely the reason that the elephants have survived in Andoni longer than in other areas as endemic species

V. CONCLUSION

DNA analysis of the dung sample has indicated that the Andoni elephant population is unlikely to be larger than 12 individuals and more likely to be around six to eight individuals. As a result the population has dropped below a viable size and does not warrant a conversation effort aimed solely at their survival.

This and the heavy dependence of the Island's on the forest make it unlikely that a successful conservation effort could be implemented here. A growing population and increasing oil industry activity result in ever increasing demands on both resources and land. It is sadness that we cannot recommend further conservation activities to be undert on behalf of elephants. Though the Andoni population will continue to be around for some time but in no distant time, we expect that the last population of elephants in the Niger Delta will go extinct. This community has also lost out its population of the sea hippopotamus and lake oil is currently drilling its residues of condensate. The great question is where will the people of Niger Delta and Andoni in particular run to when the oil and gas is gone? Let us see full details of the exploitation of the island by a combination of exploitation team that has responded to elephant invasion of Ikuru town in 1995/1997 and findings or discovery in another paper.

VI. RECOMMENDATION

Nigeria is a part of African Union and the United Nation and the issues of the Niger Delta crises and extinction is a national disaster that requires the intervention of all. We use this medium to appeal and call for intervention by the Nigerian government, deep offshore oil and gas body, the African Union and the United Nations Environmental protective programmes on the Niger Delta of Nigeria as we may not have any replica across the world by this study findings. If there is, it will not carry the same global coordinate and continent which makes conservation and reparation a major plea and prayer by this study report. This is beyond the photogenics of amnesty showing the surrendering of arms whereas the bone of contention is actually the extinction threat on Niger Delta biodiversity and source of livelihood due to oil and gas exploitation to sustain the Nigerian economy and the multinational interest.

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