

1<sup>st</sup> Affidavit of Marcella Kelly  
on behalf of the Appellant  
July 23, 2003

IN THE PRIVY COUNCIL

ON APPEAL FROM THE COURT OF APPEAL IN BELIZE

BETWEEN:

THE BELIZE ALLIANCE OF CONSERVATION  
NON-GOVERNMENTAL ORGANISATIONS

Petitioner

-and-

(1) THE DEPARTMENT OF THE ENVIRONMENT  
(2) BELIZE ELECTRICITY COMPANY LIMITED

Respondents

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AFFIDAVIT OF MARCELLA KELLY  
July 23, 2003

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I, Marcella Kelly of RR 1 Box 277, Newport, VA 24128; USA MAKE  
OATH AND SAY as follows:

1. I am a biologist, specializing in the ecology of wild feline species (cats), including puma, ocelots, jaguar and other species. I completed a B.S. in Wildlife Biology in 1991, and received my Ph.D. in Ecology in 2000 from the University of California at Davis under direction of my graduate advisor, Dr. Tim Caro who has more than 20 years of experience and is recognized as one of the leading experts on tropical wildlife systems. In 2001 I received the best doctoral dissertation award from U.C. Davis and in 2003, I became a member of the IUCN

(World Conservation Union) cat specialist group. I am currently an Assistant Professor at Virginia Tech University. My current research includes population dynamics and conservation of wild cats in the Chiquibul Forest Reserve in Belize, Central America.

2. I have read the relevant sections of the EIA, and they are highly deficient with respect to the kind of data that would be required to make a scientifically justifiable assessment of the extent of impacts on wildlife.
3. As a direct demonstration of the inadequacy of the wildlife information in the EIA, recent data I have collected shows a far higher density of wild cats in the region that would be affected by the dam than was previously expected. This additional data shows that the dam may not only affect “some” habitat for wild cats, but it may affect one of the most important habitat areas for wild cats in the neotropics.
4. Over the past 24 months I have conducted population surveys of the wild cats of the Chiquibul Forest around Las Cuevas Research Station. This area of this study is also contiguous with the forests of the Cockscomb Basin Reserve—the world’s only reserve dedicated to the protection of jaguars. I have used the method of “camera-trapping”, which photographs wildlife that passes by various camera stations placed at regular intervals in a grid pattern over an area of approximately 160 km<sup>2</sup>. The area of this study includes the region that would be flooded by the reservoir of the proposed Chalillo dam.

5. The data from these studies demonstrates that the area that would be flooded by the dam is habitat for exceedingly high densities of large cats, including puma, ocelots and jaguar. In a collaborative paper that is currently *In Press* at the journal *Oryx*, I and eight other scientists followed standardized camera trapping procedures to survey jaguars across six different study sites throughout Latin America. The sites with the highest jaguar densities (at 7.5-8.8 jaguars per 100 km<sup>2</sup>) were Cockscomb Basin and the Chiquibul Forest Reserve (Silver et al. *In press*). In addition, La Selva Maya (the Mayan Forest of Belize, Guatemala, and Mexico) has already been identified as a jaguar stronghold and a core area on which to base conservation efforts (Sanderson *et al.* 2002). These two research papers are shown to me and marked M.K.(1) and M.K.(2) for identification. Though data on pumas and ocelots will not be completely analyzed until this fall, preliminary results show equivalent puma numbers and substantially higher ocelot numbers. The data so far suggest that the region including the area that would be flooded by the dam may host the highest density of large cats anywhere in the neotropics.
  
6. The reason for this high density is likely a combination of unique factors: The remoteness of the area, unique vegetation patterns caused by the rise and fall of the Macal River leading to high prey availability, and perhaps most importantly, the lack of human disturbance across a large area. Large cats, such as the jaguar, require a fairly extensive range and may cover many kilometers a day. I have photographed a jaguar twice on the same day (10 hours apart) at

camera stations separated by 18 km. Human disturbance within this range tends to disturb jaguar ranging patterns. As human encroachment continues, the likelihood of confrontations increases, and eventually, jaguars will be displaced and eliminated.

7. Due to human encroachment, there are few areas of intact forest in Central America that are large enough to sustain viable populations of large cats, including jaguar. Approximately seventy percent of the original forested areas of Central America have been lost over the last century. Many of these cat species are listed as endangered, and damage to an area where populations are currently healthy could have important consequences for the species' as a whole. La Selva Maya is the largest intact tropical rainforest in Central America. As one of the few places with healthy populations of large cats, any disturbance to the Chiquibul area, especially one as large as the proposed Chalillo dam project, could have implications for the survival of these species at the local, regional and international level.
8. It is my professional opinion that the proposed Chalillo dam project would cause significant and irreversible changes in the distribution patterns of feline species in Belize. The dam would flood a key foraging area for the species that the cats depend upon for food. It would also fragment the forest and, most importantly, open the way for human settlement.
9. As a result of the data I have collected, and continue to collect, regarding the densities of cat species in the Chiquibul area, it may

soon be possible to conclude that this dam would also irreversibly damage the premier remaining habitat area for cat species in the neotropics. Due in part to the short time in which the EIA studies were conducted (3 months for the Natural History Museum of London study, which is by far the most comprehensive in the EIA), the information I am now collecting was not available at the time the EIA was submitted to the Department of Environment in Belize.

10. If a public hearing were held, and if requested by the Belize Alliance of Conservation NGOs or other groups in Belize, I would be willing and interested to present the data that I have collected since the submission of the EIA, and to discuss the implications of the dam construction on local, regional and international populations of wild cat species. Dr. Caro wrote to the Department of the Environment, expressing his willingness and interest in providing such information, but received no response.

#### Potentially irreversible effects of Project Construction

11. The long-term effects of the project would be significant and irreversible, perhaps on an international level. The immediate effects of project construction could also be significant and irreversible.
12. A feature that characterizes the Chiquibul forest is its lack of human disturbance. As a result, wildlife populations have flourished, and the wildlife species show an unusual boldness (i.e. lack of fear of humans). The construction-related activities that have begun and, if

no injunction is granted, would continue at least for the next year, could have a number of irreversible, negative effects. Among these are:

- A. Accidental confrontations: The wildlife of the area, unused to human activity, may not show adequate caution and may be injured as a result, coming into contact with people or heavy machinery.
  - B. Hunting: Typically, though the companies in charge of the project may attempt to implement measures to prevent this, hunting often accompanies large construction projects.
  - C. Roads: The construction of roads, and traffic on these roads, pose many threats to wildlife including—fragmentation of wildlife habitat, increased fire hazards during the dry seasons, collision of animals with construction vehicles, and access by humans to previously undisturbed habitat.
13. Construction activities currently underway on the Chalillo dam include blasting and other loud noises, cutting of trees, movement of large machines, and the presence of hundreds of workers. The area of the proposed project has, to my knowledge, not been disturbed with this scale of human activity since the time of the Maya hundreds of years ago— and even longer ago in some parts of the Chiquibul Reserve. As a result, the long-term effects of project construction could be quite extensive. Since the concentration of wildlife in the

area is so high, it is inevitable that construction activities will disturb, and likely cause the injury and/or death of many animals. Many of the species, as previously mentioned, are in danger of extinction. The harm caused to these endangered species by construction on the Chalillo project, which would continue if no injunction is granted, therefore should not be taken lightly. Each day that construction activities continue, the risks to wildlife persist, and the probability of irreversible damage (i.e. where species cannot recover to their previous state) increases. This is not just a matter of temporary displacement.

Sworn to by the above-named  
Marcella Kelly at  
Newport,  
Virginia, USA  
on the 23<sup>th</sup> day of July,  
2003

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Marcella Kelly

Before me,

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print name of witness: