

12-15-1980

Lake Manyara Elephant Research

Rick Weyerhaeuser
World Wildlife Fund - U.S.

Follow this and additional works at: <https://digitalcommons.wayne.edu/elephant>

Recommended Citation

Weyerhaeuser, R. (1980). Lake Manyara Elephant Research. *Elephant*, 1(4), 164-168. Doi: 10.22237/elephant/1521731756

This Article is brought to you for free and open access by the Open Access Journals at DigitalCommons@WayneState. It has been accepted for inclusion in *Elephant* by an authorized editor of DigitalCommons@WayneState.

LAKE MANYARA ELEPHANT RESEARCH*by **Rick Weyerhaeuser**

Earlier this year, I was fortunate enough to obtain a job with the IUCN (International Union for Conservation of Nature and Natural Resources) Elephant Survey and Conservation Programme under the direction of Dr. Iain Douglas-Hamilton. The basic objective of the group, according to the project description, is "to assess the current status and future prospects of the African elephant, and to recommend an action program to IUCN/World Wildlife Fund for improving the conservation of this species. The ultimate goal will be to encourage people and governments to value elephants both for their intrinsic value and for their economic potential as a self-sustaining natural resource." The major focus of the program at the present time is a continent-wide censusing of current population levels and ranges. However, equally important to the long-term understanding of the species and its population dynamics is the field research that is done at Lake Manyara National Park in Tanzania.

The Park was originally used as an elephant research center from 1966-1970 by Douglas-Hamilton. He was the first to use the method of individual recognition for a study on a population of wild elephants. The fact that he was able to recognize all the individual elephants in the most commonly seen groups provided him with a unique tool. Using this method, he was able to determine and describe very accurately the social relationships between given elephants. This population of "known" elephants, then, provided the data for what turned out to be a highly significant pioneering study into elephant behavior and ecology. But perhaps more important in the long run, it provided a basis for further monitoring and study.

In 1976, an effort was begun to try to relearn the individual elephants of the Manyara population in hopes of instituting a permanent elephant research center there. John Scherlis, a Harvard undergraduate, spent nearly six months camped in the Park relearning individual elephants and reconstructing their Family Units. A Family Unit is made up of related females and their calves and was found by Douglas-Hamilton to be the basic social grouping. He described them as being of an extremely cohesive and consistent nature.

I went down to Manyara in January 1978 and, using the work of Douglas-Hamilton and Scherlis as a base, by June had brought the level of knowledge on Manyara elephants nearly to the 1970 level. We were at the point where valuable information on relatively long-term population and social dynamics could be gathered by comparing the 1970 population to the 1978 population.

*Received: February 11, 1980.

Regarding social dynamics, we found ourselves confronted by some fascinating data. Of the 26 Family Units whose individuals were known 100 percent in both 1970 and 1978, three had split in two, one had split in three, twenty remained as they were, and two had joined together to form one.

Of the four groups that split, all but one had shown splitting tendencies in 1970. The one group that appeared solid in 1970, however, had undergone a dramatic increase in numbers in a relatively short time period. This increase then most probably provided the catalyst for the split.

The fact that 20 of the 26 Family Units remained unchanged, and that those that did split maintained statistically significant relationships, reinforced the concept of Family Unit solidarity.

The two Family Units that joined as one were shown to have a statistically significant relationship in 1970 and were defined by Douglas-Hamilton as being of the same kinship group. The interesting factor here is that all three of the adult females in one of the Family Units died in 1977 and the rest of their group then united with the other, which was led by two large cows. This observation sheds some interesting light on leadership factors within Family Units and on bonds that hold them together.

Population dynamics are particularly relevant in Manyara because it is often cited as one of the "classic" elephant problem areas. Manyara has the highest recorded density of elephants in Africa, greater than $5/\text{km}^2$, a density that is considered by most to be higher than the carrying capacity of the land.⁺ The extensive damage inflicted on the Acacia tortilis trees in the Park by elephants is the primary evidence of this overcrowding.

There are two basic schools of thought on what to do about the elephant problem. The management element states that, because it is a problem caused by people, it should be solved by them. They state correctly that the overcrowding is a recent phenomenon that has come about because of human expansion and the consequent restriction of elephant ranges in a relatively short time period. They also believe that because this has happened in such a short period of time, the elephants have not had time to adapt properly and they are, therefore, out of balance with their environment. The answer they propose is a controlled culling of elephants.

The laissez faire group states that it is a natural problem and should be left to nature to solve. They state correctly that nature has been adapting to changes for millions of years. They believe that the reductions in the Acacia tortilis woodlands are part of a much greater natural cycle. To put it simplistically, as the woodlands are transformed to grasslands, there will be a subsequent drop in elephant numbers. This reduction would then allow for regeneration of the woodlands and a consequent rise in elephant numbers again, thus completing the cycle.

⁺The carrying capacity of the land is its potential to sustain a limited fauna.

It is really very difficult to find fault with either argument, simply because we still do not know enough, thus the need for long-term monitoring of elephant populations and their habitat. Manyara has been monitored now, on and off, since 1966. This is really a very short time period when you consider that the life span of one elephant is roughly equivalent to that of a human. We have, however, managed to gather some extremely interesting data on population dynamics.

Douglas-Hamilton recorded a total Park population of 448 elephants in 1967, giving a density of $5.3/\text{km}^2$. This was the highest density of elephants ever recorded in Africa and came at a time when the issue of elephant damage to their habitat was just becoming a major issue. In the four years that Douglas-Hamilton was there, he recorded an increase of 12 percent to 503 elephants in 1970, a density of $5.9/\text{km}^2$. This was accompanied by further damage to the Acacia trees. The damage was so bad that Douglas-Hamilton calculated then that if that rate of destruction kept up, there would be no Acacia tortilis left by 1980!

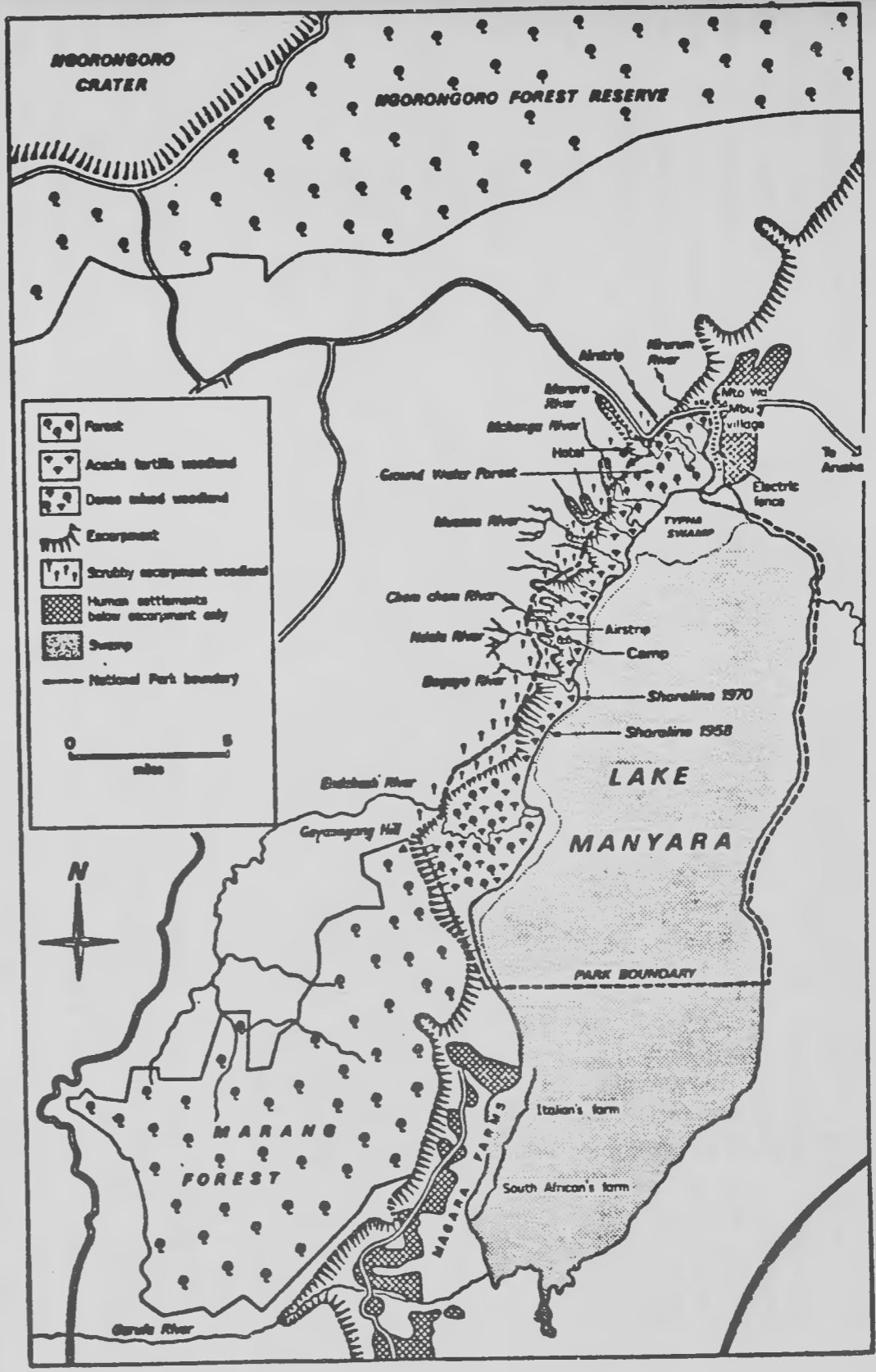
While I do not have Scherlis' observations on the trees, I do have his population estimates which show a dramatic increase of 20 percent from 1970 to 604 elephants in 1976, a density of $7.1/\text{km}^2$. Something had to give, and in 1977 it did. Perhaps instigated by drought that hit the Park in 1976-77, an unknown disease swept through Manyara killing approximately 130 elephants as well as severely reducing the numbers of impala and other species. The elephant mortality rate was 21.6 percent and resulted in a 1978 population estimate for Manyara of 502 elephants, nearly identical to that recorded by Douglas-Hamilton in 1970.

My observations of the Acacia tortilis trees for 1978, while not quantified, do give reason for limited optimism. It now appears that there will be plenty of trees remaining in 1980 and while the destruction goes on, it is at a significantly reduced rate from that of 1970. In any case, with both the reduction in population and the reduced rate of tree destruction, Manyara has been provided with a respite that may become permanent if certain policies of the Tanzanian Government can be put into effect.

Tanzania National Parks had reported in 1970 that an alternative to the cropping and laissez faire schemes existed at Manyara. There was sufficient land of an appropriate nature to the south of the Park, enough so that an expansion of Manyara seemed feasible. Expansion of the Park would create corridors to a large forest preserve in the south which would greatly enlarge the amount of land available to the elephants. This would then reduce the pressure on the original Park and allow for more natural seasonal movements throughout the expanded Park.

Figure 1. (opposite left) East Africa's national parks and game reserves depicting Lake Manyara and Tarangire National Parks. Figure 2. (opposite right) Lake Manyara National Park and the Marang Forest. (Both figures after Douglas-Hamilton, I., and O. Douglas-Hamilton. 1975. Among the elephants. The Viking Press, Inc., New York, 285 pp.)





Finally, this past March after a long delay, the vice-president of Tanzania announced on the radio that the expansion would in fact become a reality. Manyara, it is planned, will be expanded not only to the west and south but also to the southeast where a huge new corridor will connect it with Tarangire National Park. The Park will effectively be increased in size well over one hundred times and Manyara will then be in a position to become a truly natural national park. The government of Tanzania should be commended for these outstanding conservation commitments.

In a letter dated June 10, 1980, Weyerhaeuser wrote informing us of the further developments: "...it now appears that the Marang forest and the area around the hotel will definitely be included in the park. The future status of the farms on the present southern boundary was unclear; however, it looks like the corridor down to Tarangire will be designated as conservation area much like Ngorongoro."

There are many people who have contributed greatly to the ongoing success of the Lake Manyara Elephant Research Project. I would like to thank in particular Mr. Benjamin Kanza, the park warden at Manyara, and Mr. Mhoja Burengo, the park ranger who was assigned to the elephant research project. Without their cooperation, assistance and friendship, our research would have been impossible. I would also like to give special thanks to the Tanzania National Parks and the people of Mto wa Mbu for allowing me to be their guest for six months.

**Author's address: World Wildlife Fund-U.S., 1601 Connecticut Avenue, N.W.,
Washington, D.C., 20009, USA**