SESSION TITLE: AFRICAN ELEPHANT DATABASE AND DATA RELATED ISSUES

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PRESENTATION: PROPOSAL FOR INCORPORATION OF GRID-BASED DATA INTO THE AFRICAN ELEPHANT DATABASE

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INTRODUCTION

Data on estimates of elephant numbers within the African Elephant Database is now well documented, and the quality of the data is described in the database. However, the quality of information on elephant range is much poorer and is inadequately documented. To some extent these problems will be resolved by ensuring that the source of range maps will be referenced in future versions of the database. However, there are still major problems with the process of drawing range maps.

New range maps tend to be based on changes from existing versions. Where the person who is drawing the map has inadequate personal knowledge of the entire elephant range within his/her country, he/she is likely to perpetuate inaccuracies or previous guesses that were based on inadequate information. Because range is simply displayed as polygons with no indication of quality, such information appears to be as authoritative as that from countries with very good data.

A second problem is with defining the edge of the elephant range. There is seldom a 'hard edge' such as a fence precisely to circumscribe range. Where range is limited by a rainfall gradient, the range may change from year to year, depending on the rainfall in more arid areas. Where elephant populations are being disturbed, there may also be animals wandering around in unusual areas.

In order to deal with these problems and to have range information in the database that is objective and gives some indication of data quality, it is proposed to include grid-based distributional information within the database. As with bird atlases, it is proposed that this should be based on a quarter degree geographic grid system (although this needs to be considered further, and it may be necessary to adopt a half-degree grid).

WHAT SORT OF DATA CAN GO IN A GRID-BASED SYSTEM?

Information on elephant distribution varies greatly in quality. It is important to use a system that does not degrade the quality of the best data, but does not reject less good information. It is also important to have a system that allows negative data to be entered.

The best quality data is from aerial surveys, and includes density data and negative information. Intensity of survey will have an effect on the data, since low intensity surveys will tend to give more empty grid cells, and higher density estimates in cells where elephants are observed. Where there are repeated low intensity surveys, it is best not to rely on the most recent data, but to pool surveys, perhaps using a five-year cut-off. To avoid the problem of bias with density estimates, density data should be excluded if it comes from surveys lower than a particular intensity. Consideration could also be given to the use of smoothing functions. There may be significant differences between wet and dry season surveys, and these should be kept separate.

The next best data will come from people who have detailed knowledge of a particular area. They are likely to be able to indicate whether elephants or their signs have been observed in a particular grid square, and also to indicate areas which are never used by elephants to be able to indicate whether elephants or their signs have been observed in a particular grid square, and also to indicate areas which are never used by elephants.

The poorest kind of information will come from people who have traveled through an area once, and have some definite information on where elephants or their signs have been seen, but cannot provide convincing negative information. This will particularly be the case where observers are traveling by road. Although the quality of this information may be poor, it may be all that we can get for many counties, and should not be rejected.

STRUCTURE OF THE DATABASE

It is proposed that data for each grid cell be categorised into five types, as follows:

1. Density estimate
2. Elephants or sign observed - give date and type of observation
3. Not elephant range
4. No elephants recorded
5. No information

Data of a higher category will automatically replace previous data in a lower category.

The database will consist of three tables:

1. The first table consists of the basic information from data forms. Each row is a single grid cell. Columns are for county, grid cell boundaries, type of category, date (or year in the case of 'not elephant range'), type of observation (direct, dung, feeding signs, informant), observations made on foot, from vehicle or aircraft.
2. This will link to another table which summarises the above data by year and season, with a separate row for each cell in each year and season. Where there is multiple data for single cells in a particular year and season, ie a definite sign of elephants from one record, and negative data from another, the definite information will take precedence.

3. Information from Table 2 will be summarised in further tables which will be linked to maps. For an update there will be two tables, one for wet season and one for dry season (in counties where this is relevant, or where there is good enough data to make it worthwhile). This will summarise all the information over the previous five years from Table 2, giving positive values for all cells with any positive records over this time, and taking the averages of density estimates where there have been repeated surveys. For counties with poor quality information, it may be necessary to degrade the resolution from quarter degree grids to half degree or even one degree at this stage.

CONCLUSION

The update and improvement of the AED is a constant process, and one which the DRTF is continually striving to effect. By instituting this new system of data collection for distributional data into the AED, it is hoped that objectivity and an indication of data quality for elephant distribution can be introduced into the database. With more accurrate range information, the quantitative analyses which can be done can be increased, improving the accuracy and usability of outputs for users.

PRESENTATION: PREDICTING HUMAN-ELEPHANT CONFLICT

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INTRODUCTION

At its meeting in April 1997, the AfESG Data Review Task Force agreed that the African Elephant Database is ready to be used for analytical purposes, and that it should be applied to particular problems of elephant conservation. It has been suggested that the database, together with other data layers, may be used to predict where human-elephant conflict is most severe, and where it is likely to become a problem in the future.

At the Inaugural Meeting of the AfESG Human-Elephant Conflict Task Force (HETF) on 27-28 January 1997, it was agreed that one of the objectives of the HETF should be to identify existing human-elephant conflict sites. Following this meeting the database manager generated a preliminary model of conflict based on overlap between elephant range, arable farmland, and areas with a high human population density. Preliminary assessment during the AED Task Force meeting indicated that this approach might be useful, but that it would be necessary to refine the measures used to produce maps that closely reflected the situation on the ground. In particular it appeared