

## Improving the record keeping of the zookeepers in Zagreb Zoo



**J.L. Hofsteede**  
**T. Zonnenberg**





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## **Compiled by**

J.L. Hofsteede, Student Wildlife Management 910615002

T. Zonnenberg, Student Wildlife management 890914002

Van Hall Larenstein, University of Applied science, the Netherlands  
Department of Animal Management

## **Supervisors of Van Hall Larenstein**

Okka Bangma, Lecturer Wildlife Management

Tine Griede, Lecturer Wildlife Management

## **Client**

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## Summary

Zoos in Europe developed in different ways. Whereas zoos in West-Europa flourished in the 19<sup>th</sup> century, zoos in Middle and East-Europe experienced harder times. Nowadays zoos demand more from their zookeepers. But, zookeepers from the Croatian zoo Zagreb Zoo do not have the educational background that is required in modern zoos. Zagreb Zoo must conform to the modern zoo standards such as that from EAZA. In these standards is also mentioned that keeping animal records is demanded for a EAZA membered zoo. A possible solution to train zookeepers in keeping animal records is a training program about record keeping. To develop this training program, more insight in record keeping is needed. The aim of this research is to define how unusual events or abnormal situations can be recognized during the daily work of a zookeeper and how these events or situations can be best communicated through daily reports. Furthermore, there is a focus on the possibility of placing these events and situations under overarching themes for the benefit of better communication of these events and situations. All of this is done to gain insight in the motivation, knowledge and skills that are required for the improvement of the quality of record keeping in Zagreb Zoo. This advice is then used to develop a training program for the zookeepers in Zagreb Zoo. For this research is asked how unusual or abnormal events within the zoo can be recognized by a zookeeper and communicated through a daily report to improve quality of record keeping within Zagreb Zoo. To gain more insight on this matter 8 zookeepers and 2 registrars have been interviewed in three different zoos. In this interview they are asked when they would classify an event as unusual or abnormal, how this can be categorized into overarching themes, which skills and knowledge is needed and what their motivation is to keep animal records. This resulted that unusual events and abnormal situation can be categorized into three main themes: deviations in the normal daily routine and life history events, abnormal behavior and health problems. They classify an event as unusual when it deviates from the normal situation. To recognize these events you need to know the biology of the species, and also at the biology of an individual. A zookeeper also need to have observation and language skills. When a unusual event is encountered it should be recorded briefly and concise, with only relevant information. It was clearly noted that only facts should be written down, and when not sure that the information is based on an assumption. Zookeepers are mostly motivated for their personal short term benefit. Only the registrars especially mentioned long term benefits such as housing and husbandry, breeding programs and conservation programs. This was differently stated in literature, which is more focused on the long term benefits. It can also be mentioned that motivation is widely spread among zookeepers and there is not much census. The results will form the base in the new developing training program. The unusual and abnormal events will be categorized in the main three themes. A more profound focus will be set on the long term benefit of record keeping to motivate zookeepers and give insights in the importance of it.



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## 1. Introduction

Since the 19<sup>th</sup> century, zoos in West and Central-Eastern Europe developed in different ways (Kisling, 2001<sup>a</sup>). During the late 20<sup>th</sup> century zoos, in the western part of Europe, had the possibility to flourish and become more important for conservation of species, breeding programs and studies on their animals (Hosey, Melfi & Pankhurst 2012; Kisling 2001<sup>a</sup>). Zoos in the Central-Eastern part of Europe suffered harder times. Difficult political transformations, economic recessions and civil wars all affected this region and played a part in the development of Central-Eastern European zoos and the educational background of their zookeepers (Kisling 2001<sup>a</sup>; Kisling 2001<sup>b</sup>; Bell & Huebler 2010).

The former Yugoslavia was a turbulent communistic region in the Central-Eastern part of Europe. After the fall of the communism, Yugoslavia broke up in several countries. One of these countries is Croatia (Curtis 1992; Bell & Huebler 2010). In Croatia more than a million people, who are now adults, did not have the opportunity to attend primary or secondary school (Doebbler 2013). In 1962 an economic recession hit the former Yugoslavia for over twelve years and in 1979 a world oil crisis caused global recession. In these times poor people suffered the most and forced their children to work instead of school (Curtis 1992; Shemyakina 2006). Between 1990 and 1995, during the independence war of Croatia, the educational system was significantly affected throughout the country and schools only offered classes at primary level (Buckland 2005; Swee, 2009). Conflicts and economic hard times had negative impacts on education in Croatia and increase the likelihood of involvement in workforce, military or marriage (Curtis 1992; Shemyakina 2006; Swee 2009). According to the study of Bell & Huebler (2010) these times resulted in a major decrease in educational background.

Before the 1970's, zookeepers were not well educated and only some had one or two years of college. Experience in zookeeping was gained through listening to and talking with experienced zookeepers (Kisling 2001<sup>b</sup>). Zoos demanded no educational background and being a zookeeper was a low profession (Xanten 2001). The American Association of Zoo Keepers (2013) describes that the times of 'all you need to be a zookeeper is love for the animals, a shovel and a strong back' are gone. The zookeeper's profession took an enormous change in the 1970's, which included the professionalism of zookeepers, along with the increase of professional zookeeper associations and training programs (Kisling 2001<sup>b</sup>; Xanten 2001). Nowadays, zoos demand more from their staff and most zookeepers are educated people with a community college diploma in biology or other related fields (AAZK 2013; DEFRA 2012; Xanten 2001). Zoo associations have formulated higher standards for zoo staff of member institutions. In these standards is mentioned that zookeepers are the first level of ensuring high animal welfare, that health of all animals has to be checked on a daily basis and notes must be made of animals that need attention and treatment (AAZK 2013; DEFRA 2012; EAZA 2008).

In Zagreb Zoo (Croatia), zookeepers do not all have the educational background that is common in Western European zoos. As a member of EAZA, Zagreb Zoo must conform to the EAZA standards (EAZA 2011). EAZA (2004; 2008), states that members must participate in breeding- and conservation programs and ensure the welfare of the animals in their care with the support of detailed data in animal records. Hosey, Melfi & Pankhurst (2012) point out that zoos cannot do without animal records. Keeping animal records are mandatory for legal permits and current zoo legislation. Data within animal records are fundamental for good management of captive animals and contribute to breeding- and conservation programs, and research initiatives. Data within an animal record keeping system is used to regularly assess and maintain (to a high standard) the health and welfare of the animals and contributes to all decisions about the animals within the zoo (Earnhardt, Thompson & Willis 1995; Hosey, Melfi & Pankhurst 2012; Kleiman 2010).

Record keeping is the creation and maintaining of records about animals within the zoo, which is done by keeping the data for these records up to date and supplemented through routine monitoring and daily observations (Hosey, Melfi & Pankhurst 2012). Moreover, the AAZK (2013), DEFRA (2012) and EAZA (2008) all agree that zookeepers should observe their animals daily and keep a daily report of the activities of each animal. According to Earnhardt, Thompson & Turnford-Erfort (2001), EAZA (2008) and Hosey, Melfi & Pankhurst (2012), each daily report should consist of at least basic information about the animal itself, acquisition and disposition, husbandry changes, medical records

and unusual events. Reports are handed to the management team, where they are processed by the registrar, who enters the information in an animal record keeping system. The main purpose of record keeping is to use the contained information within an animal record to monitor individuals and populations of animals. To use the data from animal records, it must be accurate, complete, uniform, standardized and written in an efficient way. If the animal records meet these criteria it can be easier processed into an animal record keeping system, such as ZIMS<sup>1</sup>, and thereby advancing the exchangeability of animal records across institutions and authorities. These data are also used to establish a normal value to monitor and evaluate health and welfare for an animal or a group of animals (AAZK 2013; Casteel 2007; Hosey, Melfi & Pankhurst 2012).

However, there are still situations where it is indistinct what to do when there are deviations from the normal situation. For example, when a dominant animal male, who normally eats first, is suddenly very submissive and eats last and less. This is recognized through daily monitoring and observations. It is important to note down such an event, but it is not always straightforward how and where it should be noted on a daily report. Nevertheless, this should be passed on to the first level of supervision e.g. head keepers, curators or the animal management team (Hosey, Melfi & Pankhurst 2012). The management team can analyse the (previous) data in ZIMS, which may show a possible trend for the deviation. Without previously collected data, it may be impossible to know if the deviation is the consequence of a reasonable event or that more information is needed to decide whether action is needed or not (Hosey, Melfi & Pankhurst 2012; Casteel 2007; Xanten 2001).

The quality of the data within an animal record keeping system is directly linked to the information on daily reports of zookeepers and their valuation and commitment of animal records. How to recognize and note down abnormal events or deviations from the normal situation on the daily report requires an investment in the zookeepers, but also the valuation and commitment of animal records requires an investment in the zookeepers, which can be achieved through training and education (Earnhardt, Thompson & Turner-Erfort 2001; Roberts at al. 2004). It must not be forgotten that motivation of zookeepers on the importance of record keeping is essential to succeed in keeping good animal records. Therefore a training program can improve the daily work of zookeepers in Zagreb Zoo. Considering the importance of record keeping, the training program will focus on educating the zookeepers on record keeping. This training program will be developed for internal use. The inclusion of a teacher's guideline makes internal education possible.

## **1.1 Research goal**

The aim of this research is to define how unusual events or abnormal situations can be recognized during the daily work of a zookeeper and how these events or situations can be best communicated through daily reports. Furthermore, there is a focus on the possibility of placing these events and situations under overarching themes for the benefit of better communication of these events and situations. All of this is done to gain insight in the motivation, knowledge and skills that are required for the improvement of the quality of record keeping in Zagreb Zoo. This advice is then used to develop a training program for the zookeepers in Zagreb Zoo.

## **1.2 Research questions**

How can unusual or abnormal events within the zoo be recognized by a zookeeper and communicated through a daily report to improve quality of record keeping within Zagreb Zoo?

- Which events within a zoo can be classified as unusual or abnormal and in which themes can these events be distinguished?
- What knowledge and which skills are needed to recognize these unusual or abnormal events?
- How can unusual or abnormal events best be described on a daily report?
- What motivates the zookeepers to keep animal records?

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<sup>1</sup> ZIMS (Zoological Information Management System) is, a web-based application to help zoos better manage their animal information for internal and external business need, with its goal to develop, deploy and maintain a comprehensive information system that support a wide range of animal management and conservation activities associated with zoological institutions and the zoological community (ISIS 2012).

## 2. Method

### 2.1 Research type and design

This research is a qualitative and descriptive research (Baarda, 2012). The research design can be described as a one-time survey research, which is chosen because no causal relations need to be demonstrated and there is no interference in the current situation. This study is limited to the collection of information about record keeping in Dutch zoos, due to limited time and budget.

### 2.2 Research population

For this research, three zoos in the Netherlands are the research population. Considering the available time and budget, the three zoos that are chosen are Apeneul, DierenPark Amersfoort and Ouwehands DierenPark. The research units in the zoos are two registrars and for each zoo two or more zookeepers of different departments. To describe the general view of record keeping, zookeepers who meet certain criteria about educational background, responsibility level and experience level will be interviewed. Table 1 shows a matrix, which points out who will be interviewed.

Table 1, Interview matrix

<b>Registrar</b>	<b>Education background</b>	<b>Function</b>	<b>Department</b>	<b>Years experience</b>
Mireille Ruwaard	Vocational education	Registrar	Ouwehands Dierenpark	>10
Nils Dijkgraaf	Bachelor	Registrar	Dierenpark Amersfoort	<10
<b>Name of zookeeper</b>	<b>Education</b>	<b>Function</b>	<b>Department</b>	<b>Years of experience</b>
Jan Jansen	-	Team leader	Fish	>10
Corine de Ruijter	Vocational education	Team leader	Hoofed mammals	<10
Con Mul	Vocational education	Team leader	Elephants	>10
Olaf van Leeuwen	Vocational education	Zookeeper	Gorilla's	>10
Margreet Voogd	Vocational education	Zookeeper	Pachyderms	<10
Leo Hulsker	-	Zookeeper	Orang oetans	>10
Marjolein van der Zwet	Vocational education	Zookeeper	Small mammals	<10
Suzan Spekenbrink	Vocational education	Zookeeper	Small primates	<10

A registrar knows which information is important and is responsible for the quality of the animal records (Earnhardt, Thompson & Turner-Erfort 2001). Zookeepers of different departments will be interviewed. Different departments have different species, which could lead to different information for the animal records within each department. Zookeepers and registrars should at least have three years of work experience in their current zoo.

### 2.3 Data collection method

Interviews are taken with zookeepers or a registrar (see Appendix I) in all visited zoos. Interviews are chosen for: 1. their high response rate, 2. control of the answering process by further questioning to get satisfying answers and 3. complex questions and associated answering process are easier.

The interview is described as: a half-structured semi-open interview and are recorded with the use of a voice recorder. The topics are predefined using literature about record keeping. The important questions are predefined, and are divided into predefined topics of the interview. Within each topic

there is a starting question. Depending on the answer, multiple questions are asked until the answer is sufficient. Answers are noted on the answering sheet (See Appendix II). The interview consists of open questions for the respondents. However, possible answers are predefined as seen on the answering sheet (appendix II). The sequence of the topics is not predefined, and the researcher is free to use another sequence if it better suits the conversation. Additional comments, opinions and experiences are also noted.

This method is tested through a test interview with a zookeeper, to check if the questions are clear and if the answers can be analyzed and processed for the results. Questions that are superfluous are deleted and questions that are similar are combined for better use of the interview.

## **2.4 Data processing**

A part of the data processing is already described in the data collection method. The interviews are semi open. The respondents will all be able to give open answers to each question. All questions have predefined labels. When the respondent is answering the question, one or several labels will summarize their answers.

To process the collected data from the interviews different labels are used. Every research question is answered by multiple interview questions. With the collection and categorization of all labels the overall view of that interview question can be described and is written out. This view, of zookeepers and or registrars, is described very detailed and represent the overall view of all respondents on this topic. Similarities in answers receive extra attention; because this may point out that it is considered as very important. However, a large difference in the answers of a question represent that there are different opinions on that topic. The general view, with its similarities or differences, is used to answer the research questions.

### **3. Results**

In order to find out how unusual and abnormal events or situations within a zoo can be recognized and communicated through daily reports, a total of eight zookeepers and two registrars were interviewed. Each interview took about 60 minutes and the respondents were interviewed about unusual and abnormal situations within a zoo, knowledge and skills to recognize and describe these situations and events and their motivation to keep animal records.

#### **3.1 Classification of unusual or abnormal events and distinguished themes**

Zookeepers and registrars have to record and report unusual or abnormal events. They were asked when they would classify an event as unusual or abnormal and add their personal experience with these kinds of events or situations. This resulted in a wide range of answers, which are categorized into three main themes: (1) deviations in the normal daily routine and life history events, (2) abnormal behavior and (3) health problems.

Every event or situation which deviates from the normal daily routine can be classified as unusual or abnormal according to the majority of the zookeepers (6/8) and both registrars. Furthermore, the transport of animals, the birth of an animal, and defects in the enclosure, which could be technical defects, defects in the climate, furnishing or introducing new animals, were mentioned by the zookeepers and registrars as unusual events. Secondly, abnormal behaviour is always seen as an unusual or abnormal event according to five zookeepers and both registrars. It was notable that both registrars only mentioned new and unknown behaviour as abnormal, whereas in contrary the other four zookeepers also mentioned changes in group dynamics, group structure and unknown animal communication as abnormalities in behaviour. Equally important are health and welfare related problems, which are classified as unusual or abnormal situations according to five of the zookeepers. Three kinds of health and welfare related problems were motioned by several zookeepers, namely injuries by unknown cause, abnormal feces and the euthanasia of an animal. A deviation in eating or drinking by an animal was mentioned by one registrar and one zookeeper.

#### **3.2 Knowledge and skills**

To gain insight in the knowledge and skills necessary to recognize unusual and abnormal events, zookeepers and registrars were asked to give examples of these two competences. There were three knowledge based competences mentioned by zookeepers and registrars: (1) knowledge about the biology of the species and on an individual level, (2) knowledge about behaviour of species and on an individual level and (3) being familiar with all animal enclosures and daily routine. The skill based competences were widely spread and are not categorized.

##### **3.2.1 Knowledge**

Knowledge of the biology of the species is most important according to most of the zookeepers (7/8) and both registrars. Group- structure and dynamics of group-housed animals was specifically mentioned by two zookeepers and a registrar as an example of species biology. Additionally, knowing the biology of the species at an individual level is also very important according to most of the zookeepers (6/8) and both registrars.

Knowledge of the life history of an animal and individual specific behaviour was an example of the species biology at an individual level and was mentioned by four zookeepers and both registrars.

Furthermore, knowledge of the species behaviour was the second most mentioned competence mentioned by most of the zookeepers (6/8) and both registrars. Behavioral aspects could be divided into "natural" and "unnatural" behaviour of animals, but stereotypic behaviour should also be recognized and reported according to the zookeepers and registrars. Also mentioned as important is the competence to recognize unusual and abnormal events during the daily routine. Familiarity with animal enclosures and the enclosures' surroundings is a key competence to recognize possible unusual or abnormal events. The familiarity with the enclosures keeps the zookeepers aware of what they are

doing and therefore contributes to a safe work environment, according to both registrars and several zookeepers.

### **3.2.2 Skills**

Observing animals and noticing abnormalities in behaviour, health or the enclosure of an animal were the most mentioned skills to recognize unusual and abnormal situations during the daily routine, according to most of the zookeepers (6/8) and one registrar. Assertiveness to learn from colleagues was also mentioned as an important skill by four zookeepers. Furthermore, zookeepers should soberly assess the priority of each situation and determine the urgency of each situation with an open mind (to not make assumptions), according to the zookeepers themselves and a registrar.

### **3.3 Describing unusual and abnormal events on a daily report**

To gain insight into the description of unusual and abnormal events on a daily report, in order to analyse whether the information transfer goes well, zookeepers were asked how they would describe these events. In contrary registrars were asked how zookeepers should describe these events on daily reports.

Describing a situation briefly and to the point, when encountering an unusual or abnormal event, was mentioned as most important by all zookeepers and registrars. Moreover, the animals involved should be mentioned, including their identification, according to most of the zookeepers (6/8). Subsequently, the possible cause of the unusual or abnormal situation, actions undertaken by zookeepers, the results of these actions, the urgency of the situation and possible solutions for this situation were emphasized by five zookeepers and both registrars as necessary information to be written down. Furthermore, it should be clearly indicated on a daily report whether the information is based on facts or assumptions, because the assumptions may otherwise become the truth, as was explained by zookeepers as well as registrars.

### **3.4 Motivation of zookeepers to keep animal records**

In order to obtain more information about the motivation of zookeepers to keep animal records, the zookeepers were asked what their personal motivation is on this subject. In contrary the registrars were asked what the motivation of zookeepers should be.

In general, zookeepers are motivated to keep records for their own short term benefit, especially for the administration on their own department, transfer of information to direct colleagues and the animal management team and to fall back on the life history of their animals for the improvement of their care. In addition, records should be kept and used to solve present and future problems, to support better care for the animals and for communication among departments according to several zookeepers and both registrars. Due to the motivation of providing their own department and the animal management team with good information about the animals, zookeepers try to minimize the loss of important information by writing information down as soon as they can. Moreover, zookeepers were motivated to keep animal records because of the value of these records for themselves and for the management team. In addition, animal records are kept, in order to analyse the data and use it for housing and husbandry, breeding programs, exchange programs, research initiatives and conservation programs. Keeping records because it is mandatory by European law was only mentioned by one registrar as an important motivation of the zookeepers, but none of the zookeepers mentioned this as their motivation for keeping animal records.

The zookeepers were also asked how they would motivate other zookeepers. The zookeepers then use other motivations to motivate other zookeepers, which differ from their own motivations. Other zookeepers should know and understand the purpose and importance of keeping animal records. It was further stated that the consequences of not keeping track of animal records (loss of information) influences the communication with colleagues and the management.

## **4. Discussion & Conclusion**

In order to improve the record keeping by teaching zookeepers in Zagreb Zoo, the aim of this research was to define how unusual events or abnormal situations can be recognized and how these events or situations can be best communicated through daily reports. Additionally an insight in the motivation, knowledge and skills that are required for keeping daily records had to be determined. The research gave results, which can be used for the development of a training program on the record keeping in Zagreb Zoo.

In conclusion the main question, on recognizing unusual or abnormal events and communicating these events through a daily report, can be answered with the following conclusions. Zookeepers all classify everything deviation from the normal situations as unusual or abnormal events. Within these classified events the following themes were distinguished: daily routine, abnormal behaviour and health problems. When it comes to knowledge and skills to recognize and describe unusual and abnormal events, there are some main knowledge competences such as: knowing species biology, knowledge about species specific behaviour, familiarity with the enclosure and the daily routine. Zookeepers do have one main skill, which is observing and critical looking at animals. When describing an unusual or abnormal event or situation, zookeepers should write this briefly and to the point on a daily report and it should always include the identification of the involved animals. Everything else which should be described is zookeeper specific. The motivation to keep animal records differs per zookeeper, but there are some similarities among the zookeepers. It is still clear that motivation is something personal and it can still be said that the motivation for zookeepers is mainly focused on the short term internal benefit from the records they keep. Whereas the registrars have a long term motivation and a wider view on the benefits of keeping animal records (housing and husbandry, conservation programs, breeding programs and research initiatives). Registrars are also the only ones who say record should be kept, because it is mandatory by law.

### **4.1 Motivation**

Literature states that record keeping is more than the monitoring of an animal or group of animals. Records also contribute to breeding programs, conservation programs and research initiatives (Hosey, Melfi & Pankhurst 2012). Moreover, it is mandatory by European law and is described as important in the EAZA standards (EAZA 2008). When interviewing zookeepers, no one mentioned any of these aspects. Zookeepers only look at records for their own zoo, their own animals, their own administration. When comparing this with the zookeepers motivation about keeping animal records, it became clear that it is all for the short term and personal benefit of the zookeeper. The expectation was that there would be a more common motivation among the zookeepers. In contrary, the motivations of zookeepers were widely spread and there were almost no similarities, except for the short term and personal benefit of keeping animal records. To motivate zookeepers to keep animal records, the training program will focus not only on the short term benefit, but as equally important on the long term benefit, which was never mentioned by the zookeepers.

### **4.2 One-time survey**

Concerning the motivation (short term benefit) of zookeepers it is important to discuss that the interview is a one-time survey. At the moment the interview took place there was a certain pressure for the zookeepers to answer as many questions. According to Salisbury University (2009), being interviewed adds stress to the experience. Therefore, it is possible that zookeepers may have forgotten to mention important aspects and information or answers may therefore be incomplete.

### **4.3 Training program**

For the development of the training program, based on the results presented in this research, first will be explained what the goal of record keeping is and how records are used. This contributes to the motivation of the zookeepers which will lead to more commitment and valuation to keep animal records. Knowledge to recognize and describe unusual and abnormal events will be taught through the three main competences: knowing the species biology, knowledge about the species specific behaviour and familiarity with the enclosure and daily routine. Skills to recognize unusual and abnormal events

will be taught through several examples of used skills or skills which can be used for better recognizing these events. The description of unusual and abnormal events should always be briefly and to the point and readable. When it comes to recognizing unusual and abnormal events it will be categorized into three themes: daily routine, abnormal behaviour and health problems, which will make it easier to classify events and situations.

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## Appendix I – ‘Interview zookeepers and registrars’

# Record Keeping in Zoos (English version)

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Date:	Name:
Zoo:	Education:
Department:	Years of experience

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(Z) = Questions only for zookeepers, (R) Questions only for registrars

### Part 1: Record keeping general

1. What is the aim of record keeping according to you?
2. *Zookeeper*: How important is record keeping for you? (explanation)  
*Registrar*: How important is record keeping according to you? (explanation)
3. Describe what the contribution of daily reports is for record keeping within the zoo?
4. What are the positive and/or negative aspects of daily reports?
5. What are the most common mistakes on a zookeepers daily report?
  - a. What can be done to decline the amount of these mistakes?
  - b. Which aspects could be trained or educated to prevent these mistakes in the future?

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### Part 2: Unusual events and distinct situations

1. When is an event unusual or abnormal?
2. What are the moments that you have encountered unusual and abnormal events? (examples)
  - a. *Zookeeper*: What do you do when you encounter such events?
  - b. *Zookeeper*: How were you able to recognize these events?
    - i. How did training or education contribute to this?
  - c. What makes you decide if the information is important or not?

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### Part 3: Themes

1. How would you train or educate zookeepers on recognizing these events?
  - a. Which information on record keeping and daily reports would you definitely include in a training (program)?
2. There are certain themes within record keeping which could help training zookeepers. What themes should be in that training according to you?
  - a. In what order would you offer these themes?

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### Part 4: Daily reports within record keeping

1. *Zookeeper*: How would you express these events and abnormal situations on your daily report?  
*Registrar*: How would you recommend to express these events and abnormal situations on a daily report?
  - a. Which information should be standard on daily report?
  - b. Why these elements?

2. *Zookeeper*: In case of unusual events and abnormal situations, what standard information would you definitely write down on a daily report?
    - a. Why would you express it/write it down like that?*Registrar*: In case of unusual events and abnormal situations, what standard information would you definitely want to receive on a daily report?
    - a. Why is that information important to receive?
- 
- 

### **Part 5: Motivation and commitment**

1. *Zookeeper*: What is your motivation to fill in daily reports?
    - a. What can contribute to your motivation?*Registrar*: What should be the motivation for zookeepers to fill in their daily reports?
  2. How would you motivate (other) zookeepers on writing detailed daily reports?
    - a. Why would you motivate them in that way?
- 
- 

### **Part 6: Skills and knowledge**

1. Which knowledge contributes to recognize unusual and abnormal events?
    - a. How can this knowledge contribute?
  2. What skills contributes to recognize and write down unusual and abnormal events?
    - a. How can these skills contribute?
  3. How would you train or educate these skills and knowledge?
- 
- 

### **Part 7: Educational Program**

1. What kind of training and/or education did you receive on record keeping (and in case you did not receive training and education, how did you learn to keep records)?
  - a. Which are the important elements that you have learned?
2. If you want to train someone in writing detailed daily reports for better record keeping, on which topics should they be trained? (hand topic list to a zookeeper)
  - a. In which order would you offer these elements?
  - b. Which topics would you add yourself and which would you exclude ?
3. *Zookeeper*: What do you want to learn about record keeping to improve your daily work?  
*Registrar*: What do you think that zookeepers should learn about record keeping to improve their daily work.

## Appendix II – ‘Answering sheet interview zookeepers and registrars’

### Record Keeping in Zoos

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Date:	Name:
Zoo:	Education:
Department:	Years of experience:

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(Z) = Questions only for zookeepers, (R) Questions only for registrars

#### **PART 1: Record keeping general**

##### **Question 1. What is the aim of record keeping according to you?**

- (Detailed) animal history/History what has happened with an animal
- Use the data for future situations and events
- It is mandatory by law & legislation
- It supports breeding programs
- It supports research initiatives
- It supports conservation programs
- Other: .....

##### **Question 2. How important is record keeping for you? (Z)**

##### **How important is record keeping according to you? (R)**

- Not that important
- It is easy for the transfer of information
- It is easy for own administration
- Other: .....

**Question 3. Describe what the contribution of daily reports is for record keeping within the zoo?**

- Without daily reports it is difficult to keep records
- Without daily reports there is no control of data collection
- This is the communication tool for observation to archiving data in ZIMS
- Other: .....

**Question 4. What are the positive and/or negative aspects of daily reports?**

*Negative response*

- Important information of the zookeepers is not found back in ZIMS
- Not much influence of zookeepers which data is archived in ZIMS
- Unclear which information to mention and where to mention the information
- Unclear how to mention the information
- A daily report can easily be lost
- Zookeepers observed an event but it is not written down
- Other: .....

*Positive response*

- Feel responsible for the information to be collected
- You can fall back on earlier collected data
- Can clarify situations with the support of earlier collected data
- It is easy to transfer information with colleagues.
- Other: .....

**Question 5. What are the most common mistakes on a zookeeper's daily report?**

- Some events or situations are observed but not written down
- Write down unnecessary information
- Don't write down clear identification number/data of individual animal
- Unreadable handwriting/writing in spoken language/unclear formulation
- Wrong animal is mentioned
- Different opinion of importance of information between zookeepers and management
- Other: .....

**Question 5a What can be done to decline the amount of these common mistakes?**

- Training
- Education
- develop a protocol/manual
- Ask to the right way how to do it
- Have a notebook to write everything down
- Not (too) prematurely fill in the daily report
- Other: .....

**Question 5b. Which aspects could be trained or educated to prevent these mistakes in the future?**

- This is not possible to learn/it comes with experience
- Write down information of events and situation as good as possible
- Learn to distinguish major from minor issues
- Clearly note identification of the individual animal
- Write legibly and clear language
- Use of terminology
- Other: .....

**PART 2: Unusual events and distinct situations**

**Question 1 When is an event unusual or abnormal?**

- Unrest in the animal group
- Deviant behavior
- Deviation in eating and drinking
- Deviation in daily routine
- Deviation in health
- Other:.....

**Question 2 What are the moments when you encounter unusual and abnormal events?**

- Deviated excreta
- Unknown mating behaviour
- Unknown/New observed behavior
- Changes in animal group structure/dynamics
- Changes in eating behavior
- Changes in behavior by unknown wounding
- Changes by neighbor animals
- Changes in behavior by activities outside the zoo
- Other: .....

**Question 2a. What do you do when you encounter such events? (Z)**

- You do nothing
- You discuss it with your colleagues/supervisor
- You wait how the situation or event develops
- You note it directly down as good as possible
- You use older records/information
- Other: .....

**Question 2b How were you able to recognize these events? (Z)**

- Through experience
- By knowledge about the animals
- Training/education/courses
- Other:.....

**Question 2b1 How did training or education contribute to this? (Z)**

- More knowledge about the animals
- Improvement of observation techniques
- Better recognizing (un)natural behavior
- Other:.....

**Question 2c What makes you decide if the information is important or not?**

- All information is important/everything is note down
- If there is a relation with health/wellbeing of the animal/is the health and/or wellbeing at stake
- Displayed behavior is unnatural/deviate of the natural behavior
- It affects the daily routine
- It affects the way of housing & husbandry
- Other:.....

**PART 3: Themes**

**Question 1 How would you train or educate other zookeepers on recognizing these events as well?**

- Learn observation techniques/more observing
- Reading/acquisition of new (animal)knowledge/recognizing of natural behavior/deviated behavior
- Lean how to use older records
- Show similar examples of these events
- Other:.....

**Question 1a Which information on record keeping and daily reports would you definitely include in a training (program)?**

- Aim of records (record keeping)
- The usefulness of records (record keeping)
- The role of the zookeeper in collecting data
- The usefulness of records for the animals (and their counterparts in the wild)
- Other:.....

**Question 2 There are certain themes within record keeping which could help training other zookeepers. What themes should be in that training according to you?**

**PART 4: Unusual events and distinct situations expression on daily reports**

**Question 1 How would you express these unusual events and abnormal situations on your daily report? (Z)**

**How would you recommend to express these events and abnormal situations on a daily report? (R)**

- The use of terminology
- The use of catchwords
- Write it all down
- Write in capitals/write legibly
- Write with a pen instead of a pencil
- Avoid spoken language
- Mention of correct identification/ensure that there are no misunderstandings about the animal
- Rules of mentioning certain information/data
- Other:.....

**Question 1a Which information should be standard on a daily report?**

- Date
- Person whose fill it in
- De
- Other:.....

**Question 1b Why these elements?**

**Question 2. In case of unusual events and abnormal situations, what standard information would you definitely write down on a daily report? (Z)**

**In case of unusual events and abnormal situations, what standard information would you definitely want to receive on a daily report? (R)**

- Time (of event)
- Place (of event)
- Animal/identification
- Description of the event
- Frequency of the event/occurrence
- Priority/estimate the earnestness of the event
- Description of the cause when it is determined
- Other:.....

**Question 2a Why would you express it/write it down like that? (Z)**  
**Why is that information important to receive? (R)**

**PART 5: Motivation and commitment**

**Question 1. What is your motivation to fill in daily reports? (Z)**  
**What should be the motivation for zookeepers to fill in their daily reports? (R)**

- Getting positive critical feedback
- Involvement of the management how the data is used
- Filling in is mandatory
- Understand the importance/contribution to the process
- Other:.....

**Question 1a. What can contribute to your motivation? (Z)**

- Get positive critical feedback
- Understand the importance of record keeping/to know why you do it
- Other:.....

**Question 2. How would you motivate other zookeepers on writing daily reports?**

- Explain why you have to fill in daily reports/show the usefulness of daily reports
- Explain the aim, purpose and importance of daily reports
- Explain what the consequences are when you don't fill it in/what are the benefits for yourself
- Other:.....

**Question 2a. Why would you motivate them in that way?**

**PART 6: Skills and knowledge**

**Question 1. Which knowledge contributes to recognize and write down unusual and abnormal events?**

- Known your species
- Known your animals
- Recognize the natural/unnatural behavior
- Recognize stereotypic behavior
- Recognize species-specific symptoms
- Known the daily needs of food and water
- Known the daily routines
- Other:.....

**Question 1a. How can this knowledge contributes?**

**Question 2. What skills contributes to recognize unusual and abnormal events?**

- Observation techniques
- Attentiveness
- A critical look/critically observing
- Act on the right moment
- Be able to estimate the priority of the situation/event
- Be able to separate main issues of side issues
- Other:.....

**Question 2a How can these skills contributes?**

**Question 3. How would you train or educate these skills and knowledge?**

- By doing it so/practising/gain experience
- Self-study/gain more knowledge about the species you care
- Discuss with your colleagues
- Other:.....

**PART 7: Educational Program**

**Question 1. What kind of training and/or education did you received on record keeping?**

- Education
- No education
- Followed a course/training/workshop
- Learned by experienced zookeepers
- Gain experience by practicing
- Other:.....

**Question 1a. What are the important elements that you have learned?**

- |                                                                                  |                                                                   |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------|
| <input type="checkbox"/> Observation techniques                                  | <input type="checkbox"/> Known the species                        |
| <input type="checkbox"/> Attentiveness                                           | <input type="checkbox"/> Known the animals                        |
| <input type="checkbox"/> Critically observing                                    | <input type="checkbox"/> Recognize of natural/unnatural behaviour |
| <input type="checkbox"/> Act on the right moment                                 | <input type="checkbox"/> Recognize stereotypic behavior           |
| <input type="checkbox"/> Be able to estimate the priority of the situation/event | <input type="checkbox"/> Recognize species-specific symptoms      |
| <input type="checkbox"/> Be able to separate main issues of side issues          | <input type="checkbox"/> Known the daily needs of food and water  |
| <input type="checkbox"/> Other:.....                                             | <input type="checkbox"/> Known the daily routines                 |
|                                                                                  | <input type="checkbox"/> Other:.....                              |

**Question 2 (+a). If you want to train someone in writing detailed daily reports, on which elements should they be trained? (*hand topic list to respondent*)**

- ..... Basic information/data
- ..... How to note down information/data
- ..... The use of earlier collected information/data
- ..... Note down for your own administration
- ..... The use of information/data for future situations
- ..... Information about the use of daily reports
- ..... What is record keeping
- ..... What is the importance of record keeping
- ..... What is the importance of record keeping for yourself/how can you use it for yourself
- ..... How do you deal with unusual and abnormal events or situation
- ..... The use of terminology

**Question 2b Which topics would you add and which would you exclude?**

**Question 3. What do you want to learn about record keeping to improve your daily work? (Z)**

**What do you think that zookeepers should learn about record keeping to improve their daily work? (R)**

**Additional comments**