Managing Flamingos Collectively and Individually in Europe

EAZA Flamingo
Regional-Institutional Collection Plan

Catherine King, Chair
EAZA Ciconiiformes and Phoenicopteriformes TAG

Students Inholland Delft, The Netherlands
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Preface

Five students from University INHOLLAND Delft worked on a 20 week project at Rotterdam Zoo to develop an collection plan for European zoos. This report was produced for the EAZA Ciconiiformes and Phoenicopteriformes TAG. It is a follow-up survey of the 'Fabulous Flamingo Questionnaire' reported in " Captive flamingo management on an European level" (King and van Weeren 2005). The main objectives of the follow-up questionnaire were to provide and analyze the data needed to develop an EAZA collective collection plan action list for furthering flamingo management in EAZA zoos.

We sent the questionnaire to the 157 European zoos that provided data for the Fabulous Flamingo Questionnaire. Of these, 129 responded. We would like to thank these 129 zoos for participating in 'The Fabulous Flamingo Questionnaire Follow-up Survey'. Without their cooperation this report would not have been realized. We would also like to thank Catherine King for her help and motivation, there does not exist an other person with so much love for flamingos

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Summary

This project was carried out for the EAZA Ciconiiformes and Phoenicopteriformes TAG. It was a follow-up survey to the "Fabulous Flamingo Questionnaire" reported in "Captive flamingo management on an European level" (King and van Weeren 2005).

The central question was: *Which measures are European zoos willing to take to establish a healthy flamingo population?* There are three basic management targets that the TAG strives to encourage:

1) zoos that only hold flamingos for exhibition should hold at least 20 individuals for well-being reasons,
2) zoos should hold only single species flocks
3) zoos that want to breed flamingos should have a flock of more than 40 individuals to improve/stimulate breeding result

The 157 zoos that responded to the Fabulous Flamingo Survey were sent the follow-up survey. Only the four most commonly held flamingo species *Phoenicopterus ruber, P, roseus* and *P. chilensis* (together constituting 92% of all flamingos in EAZA zoos) and the Lesser flamingo *Phoeniconaias minor* were included in the follow-up survey. The response of the follow-up survey was 82.2% (129 zoos). The responses were processed in Excel and worked out in an EAZA collective collection plan action list and this report.

This was the first time that an attempt has been made to consider flamingo management on a European-wide level. We had no idea how the zoos would react, but the comments and response rate indicate that the zoos were very receptive to this approach. It can be concluded from the results that most zoos are willing to cooperate and to consider changing their current situation if necessary to improve flamingo management.

The results described in Chapter 3 are processed in an EAZA collective collection plan action list showing each individual zoo's goals and needs. Each zoo has a unique situation that requires an individual approach and solution. The target of this EAZA collective collection plan action list is to provide information that will facilitate cooperation among institutions, helping them to reach individuals goals as well as to establish a healthy flamingo population in the European zoos that is viable and considers the well-being of the birds.

Only 26.6% of the zoos that were asked to consider a making a major change in flamingo management (enlarge enclosure to hold more animals, stop holding mixed-species flocks, or hold less flamingos where appropriate) would not consider changing their management.

Zoos were generally reluctant to hold less flamingos or stop holding them entirely in single-species situations (only 15.4% of 39 zoos chose this option) but many were willing to stop holding one or more species in mixed-species situations, in which they would still be working with one species, and usually trying to increase numbers of this species (36.7% of 30 zoos). Zoos making flamingos available to other zoos generally preferred loans or trades as possible transaction types, which would ease the financial restraints on receiving zoos.

Zoos clearly prefer to increase numbers of flamingos to achieve the TAG population goals than to reduce numbers. Half of the 34 zoos would like to enlarge enclosures to hold more individuals in cases in which group size is smaller than recommended, and all of the six zoos

that already have facilities but smaller groups than recommended did want to increase group size when asked in this context. Forty percent of the zoos with mixed-species enclosures would prefer to build a new enclosure to accommodate single species flocks, as opposed to giving up a species or not changing the situation. Zoos were especially reluctant to stop working with Lesser flamingos to enable these flamingos to be housed in larger groups.

More than half of the zoos that would consider enlarging an existing enclosure or adding another enclosure anticipated being able to make these changes within five years.

The Fabulous Flamingo Questionnaire already indicated a large deficit in flamingos needed to achieve collective institutional goals that respondents reported, with an estimated deficit of 2401 flamingos based on what zoos thought they could supply and would need between 2005-2010, and a deficit of 2716 based on population growth between 2000-2004 for the four species discussed here. While it is wonderful that so many zoos reported in the Follow Up survey that they are prepared to change their institutional goals to meet the TAG's three basic management targets, the deficit then becomes much larger still.

Only half of the respondents from the 16 zoos with breeding colonies that had stated in the Fabulous Flamingo Questionnaire they were unable supply any flamingos to other zoos were willing to consider supplying flamingos in this follow up survey. Although most (83.3%) of the zoos already willing to supply flamingos thought they could increase the number, breeding of flamingos in European zoos can in no way match the need for flamingos. Less than 10% of the zoos wanting flamingos are willing to take them at still human-dependant stages, which may give these zoos a distinct advantage in acquiring flamingos.

The reduction of species by zoos now holding multiple species will ease the deficit some, but not much as in many cases the zoos need to trade for individuals to increase the size of the flock of the remaining species. Many zoos indicated that they were planning on finding flamingos by watching the EAZA Available and Wanted List. As few flamingos are offered on this list, a more active approach is necessary.

On the other hand, 56 of the 59 zoos that plan to increase flamingo group sizes through reproduction at their zoo that do not breed flamingos now, or breed only a few, are confident that breeding will improve in the next years. While we hope they are correct in their prognosis, it is clear that few zoos will actually be able to increase numbers quickly at this point, and we know that generally the larger the colony numbers the better the chance of breeding. However numbers are not the only factor, and even zoos that are unsuccessful in acquiring new flamingos at this point should still do their best to optimize other factors to improve the likelihood of flamingo breeding. But when possible consolidate, consolidate, consolidate to achieve fewer colonies of more (single species) flamingos!

Fortunately flamingos are long-lived birds, and we have some time to work on improving the situation, but nonetheless we need to develop a cohesive strategy in maximizing our results quickly, and in considering options to acquire birds for Europe. Suggestions for developing a strategy made by Fabulous Flaming Questionnaire Follow Up Survey respondents should be discussed and acted on as appropriate.

Table of contents

1. Introduction

European zoos are striving to achieve a healthy flamingo population, as approximately 70% of EAZA zoos wish to continue working with these birds. Yet in most zoos breeding results are very disappointing, and it is necessary to improve breeding success to achieve a viable population not dependant on importation from the wild.

Larger colonies breed better, and a flock size of more than 40 individuals is recommended to stimulate synchronized breeding with more genetically diverse individuals (van Weeren and King 2005). If a zoo only wishes to exhibit flamingos and not breed them, a flock of more than 20 is recommended to provide more opportunities for the flamingos to engage in natural flock behaviours.

The three most frequently held species in European zoos are the *Phoenicopterus* taxa, i.e. the Caribbean flamingo *Phoenicopterus ruber*, Greater flamingo *Phoenicopterus (ruber) roseus* and Chilean flamingo *Phoenicopterus chilensis*. These are also the three species included in the European Regional Collection Plan. The next most numerous flamingo in European zoos is the Lesser flamingo *Phoeniconaias minor*. The Lesser flamingo has very poor breeding results and, similar to the Caribbean flamingo, it has a high death rate. Nonetheless, numerous European zoos still want to keep Lesser flamingos, therefore this species is also included in the research.

The main target of this project was to determine *Which measures are European zoos willing to take to establish a healthy flamingo population?*

This report contains the following chapters: introduction, material and methods, results, conclusions and discussion and recommendations. The main source used for this project were the questionnaire responses from European zoos and the report “Captive flamingo management on an European Level” (King and van Weeren 2005).

2. Materials and Methods

The first step in this project was to make a working-plan. The next step was to design a letter and survey for each of the 157 European zoos approached. These 157 zoos had indicated in the 'Fabulous Flamingo Questionnaire' that they now have, or are planning in the next five years to have, flamingos in the collection. The letter and survey were sent by e-mail to all the 157 European zoos. Only the four most commonly held flamingo species *Phoenicopterus ruber, P, roseus* and *P. chilensis* (together constituting 92% of all flamingos in EAZA zoos) and the Lesser flamingo *Phoeniconaias minor* were included in the follow-up survey.

The survey consisted of 18 questions. No zoo received all the questions, as questions were selected and adapted for each zoo's unique situation, using data about that zoo received in the previous survey, the 'Fabulous Flamingo Questionnaire'. The questions were directed towards achieving the three basic management targets that the TAG strives to encourage:

4) zoos that only hold flamingos for exhibition should hold at least 20 individuals for well-being reasons,
5) zoos should hold only single species flocks
6) zoos that want to breed flamingos should have a flock of more than 40 individuals to improve/stimulate breeding result

Zoos whose flocks did not meet these criteria were asked if they would want to change the situation to meet the criteria, or if not, if they would consider giving up flamingos so that these could be sent to more appropriate facilities as there is a great shortage of flamingos needed in European zoos to achieve the goals of zoos in the next five years (King and van Weeren, 2005). Zoos that have successful breeding or numbers exceeding the minimum recommended colony sizes were asked if they could contribute eggs or flamingos to zoos needing them. Zoos needing flamingos were also asked at what stage of development they could accept flamingos.

The zoos were requested to reply within three weeks because of the short time-line for this project. The (many) zoos did not respond in this period received a reminder, in which they were asked to reply within two weeks. Zoos that still had not responded after those two weeks were sent a second and last reminder. A total of 110 responses were received in time for analysis in the report, and another 19 were included in the EAZA collective collection plan action list. Three more were received later. While it was unfortunate that only the first 110 responses could be analysed for this report, we did feel that these 110 responses seem to be representative of the zoos in general.

It was often necessary to follow up a survey response with additional questions to get more detailed information. The information received in the second or third query is not included in this report but is included in the database.

The responses of the surveys were processed in Microsoft program "Excel". Some questions were linked together when analyzing and reporting the result, reducing the number of questions to 14. The responses are included here in Chapter 3 of this report. Additionally an "EAZA collective collection plan action list" organized in an "Excel" format shows each individuals zoos situation and which flamingos they can offer and which ones they need as appropriate. The EAZA collective collection plan action list is organized by country so that zoos can first look closer to home.

3. Results

The responses to questions included in the follow-up survey are described in this chapter for the first 110 responses that were received in time to be included in the analysis. The responses are elucidated by tables and figures.

3.1 Question 1: consider no longer holding flamingos or enlarge enclosure

The following two questions were asked to zoos that have facilities for less than 20 flamingos and no plans for expansion in the next five years according to their response in the Fabulous Flamingo Questionnaire:

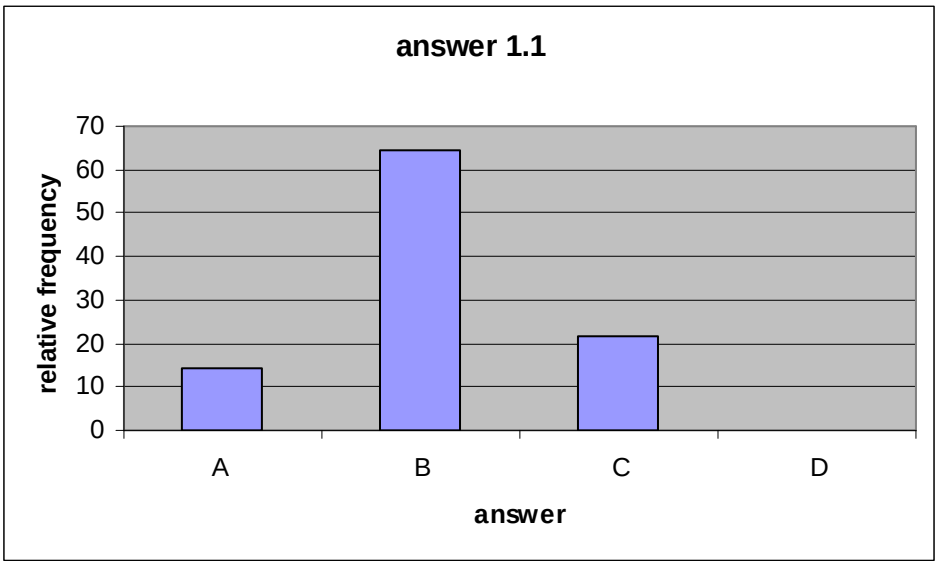
> It is highly recommended for their social well-being that flamingos be held in same-species groups of at least 20 individuals. As your facility cannot accommodate at least 20 flamingos would you consider no longer holding flamingos, and distributing those in your collection to zoos with more appropriate facilities?
>
> If you want to continue holding flamingos, would you consider enlarging your facilities within the next five years and acquiring more flamingos?

The results for the 14 responding zoos are given in Table 1 and Figures 1, 2 and 3.

Table 1: Results Question 1: consider no longer holding flamingos or enlarge enclosure if less than 20 individuals (n=14 zoos)

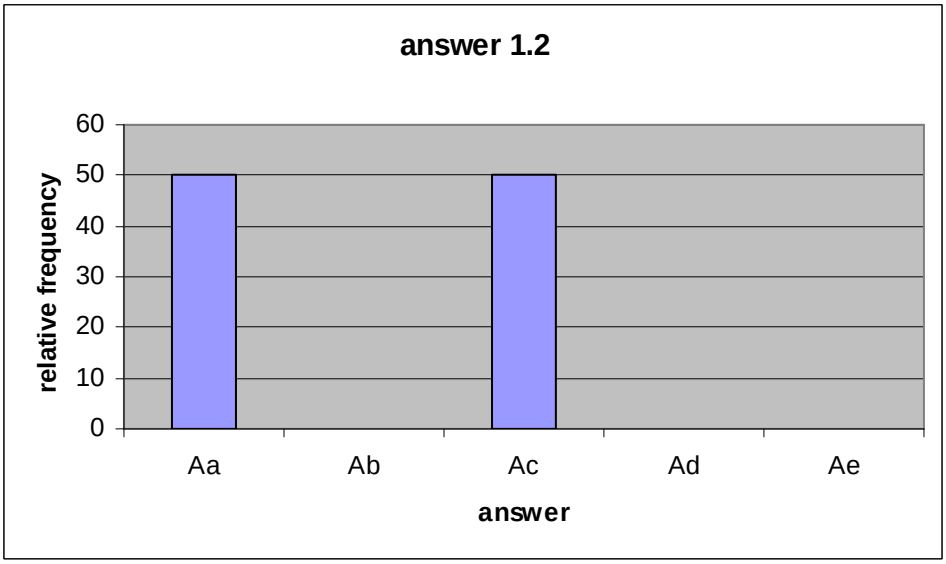
	frequency	**rel. frequency**
answer 1.1		
1A; no longer hold flamingos	2	14,29
1B; willing to enlarge enclosure and hold more flamingos	9	64,29
1C; do not want to change	3	21,43
1D; no answer	0	0,00
Total	14	100,00
answer 1.2 (1.1 A: preferred transaction type if zoos no longer want to hold flamingos)		
Aa; loan	1	50,00
Ab; trade	0	0,00
Ac; purchase	1	50,00
Ad; donation	0	0,00
Ae; no answer	0	0,00
Total	2	100,00
answer 1.3 (1.1 B: anticipated time frame to enlarge enclosure if want to enlarge and hold more flamingos)		
Ba; 0-1 years	1	11,11
Bb; 2-3 years	0	0,00
Bc; 4-5 years	5	55,56
Bd; no answer	3	33,33
Total	9	100,00

If a respondent answered 1.1 C, indicating that the zoo did not want to change the situation, the reason why was asked. The following reasons were given:
- exhibit is sufficient to hold more flamingos
- enough room
- no enlarging and keeping all the flamingos



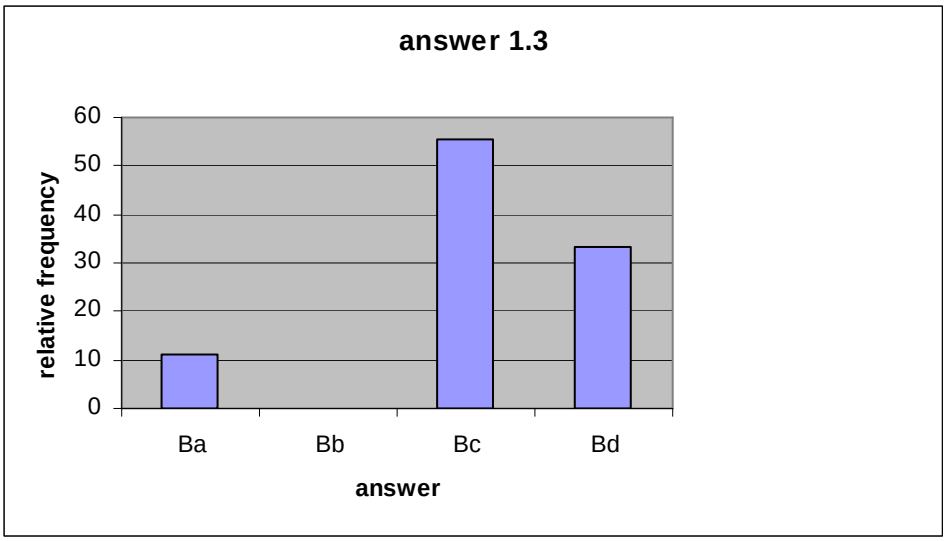
A	Willing to no long hold flamingos
B	willing to enlarge enclosure and hold more flamingos
C	do not want to change
D	no answer

Figure 1: consider no longer holding flamingos or enlarge enclosure (n=14)



Aa	Loan
Ab	Trade
Ac	Purchase
Ad	Donation
Ae	No answer

Figure 2: preferred transaction type (n=2)



Ba	0-1 years
Bb	2-3 years
Bc	4-5 years
Bd	No answer

Figure 2: anticipated time frame to enlarge enclosure (n=9)

In short: Two of the respondents from the 14 zoos who answered question 1 would be willing to stop holding flamingos, of which one would prefer to loan them to another zoo and the other would prefer to sell them. Nine (64.3%) are willing to enlarge their enclosure and hold more flamingos, but most cannot do this in the next three years or do not know when they can do it. Only three (21.4%) of the 14 zoos do not want to change the situation at all.

3.2 Question 2: reduce goal number or enlarge enclosures

The following two questions were asked to respondents who reported in the Fabulous flamingo Questionnaire that their zoos have facilities for less than 40 flamingos and no plans for expansion in next years:

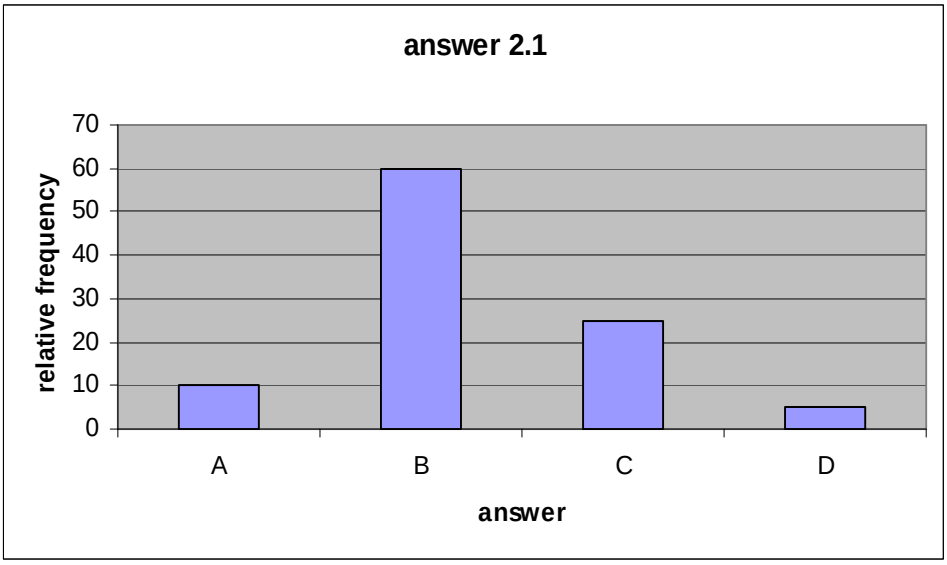
> It is highly recommended for consistent breeding results that flamingos be held in groups of more than 40 individuals of the same species. As your facility cannot accommodate at least 40 flamingos, would you consider reducing the (goal) number to 20-25 birds and distributing the rest to zoos with more appropriate breeding facilities?
>
> If you want to hold a breeding group of flamingos, would you consider enlarging your facilities within the next five years to accommodate more than 40 flamingos?

The results for the 20 zoos that responded to these questions are given in Table 2 and Figures 4, 5 and 6.

Table 2: Results question 2: reduce goal number or enlarge enclosures

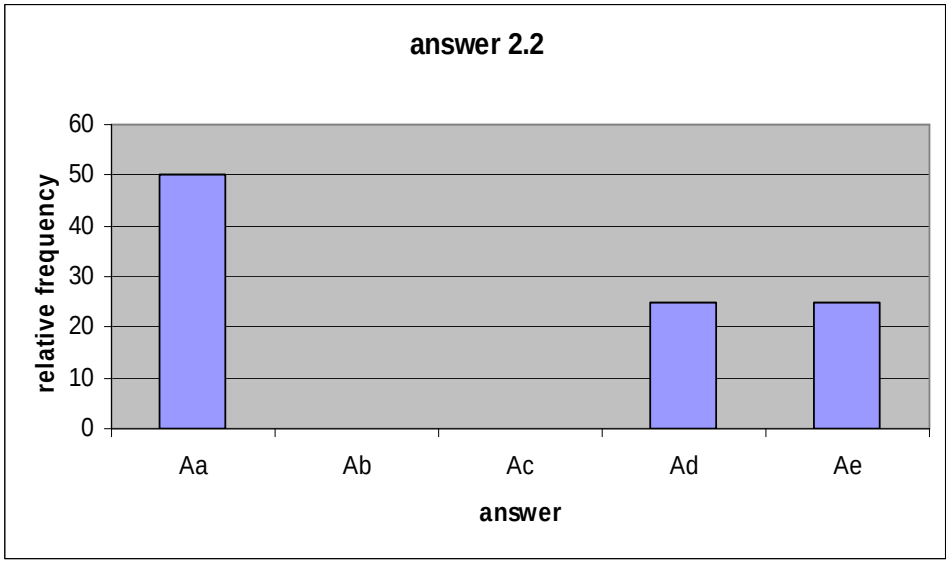
	frequency	**rel. frequency**
answer 2.1		
2A; consider reducing goal number of flamingos	2	10,00
2B; willing to enlarge enclosure and hold more	12	60,00
2C; wants to go on as previously planned	5	25,00
2D; no answer	1	5,00
Total	20	100,00

answer 2.2 (2.1 A: preferred transaction type if zoos want to reduce the goal number)		
Aa; loan	2	50,00
Ab; trade	0	0,00
Ac; purchase	0	0,00
Ad; donation	1	25,00
Ae; no answer	1	25,00
Total	4	100,00
answer 2.3 (2.1 B: anticipated time frame to enlarge enclosure)		
Ba; 0-1 years	0	0,00
Bb; 2-3 years	6	50,00
Bc; 4-5 years	4	33,33
Bd; no answer	2	16,67
Total	12	100,00



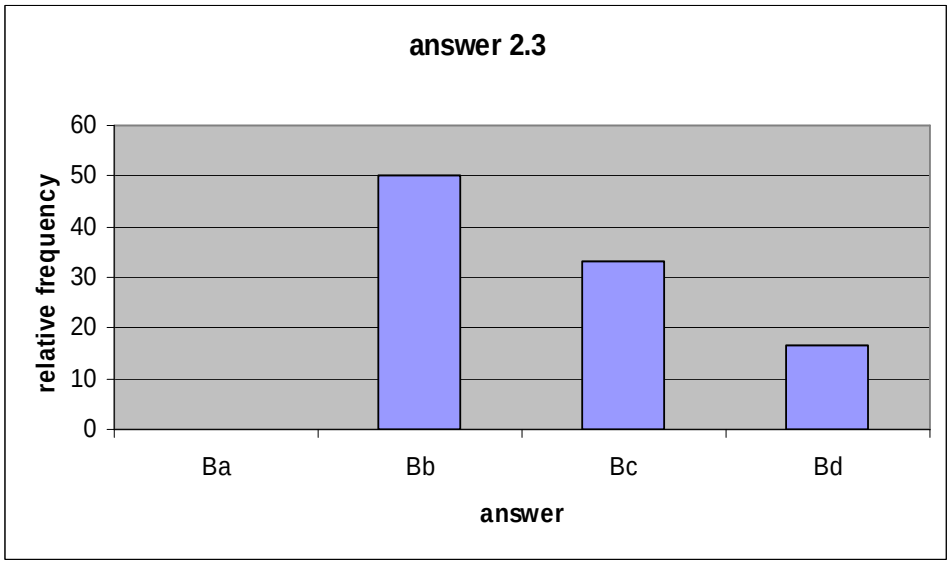
A	Consider reducing goal number of flamingos
B	Willing to enlarge enclosure and hold more
C	Wants to go on as previously planned
D	No answer

Figure 4: reduce goal number or enlarge enclosures (n=20)



Aa	Loan
Ab	Trade
Ac	Purchase
Ad	Donation
Ae	No answer

Figure 5: preferred transaction type (n=4)



Ba	0-1 years
Bb	2-3 years
Bc	4-5 years
Bd	No answer

Figure 6: anticipated time frame to enlarge enclosure (n=12)

In short: only 2 of the 20 zoos who answered Question 2 will consider reducing the (goal) number of flamingos, while 60% are willing to consider enlarging the enclosure to hold more flamingos. Of these, half anticipate enlarging the enclosure in 2-3 years while the other half would take longer or did not know. One-fourth wants to go on as previously planned and one did not answer this question.

3.3 Question 3: plans for specific flamingos

Zoos that hold more than one species of flamingos in the same enclosure and have indicated that they will not be holding one of the species in the future but did not indicate that the birds would be available to other zoos in the Fabulous Flamingo Questionanaire were asked:

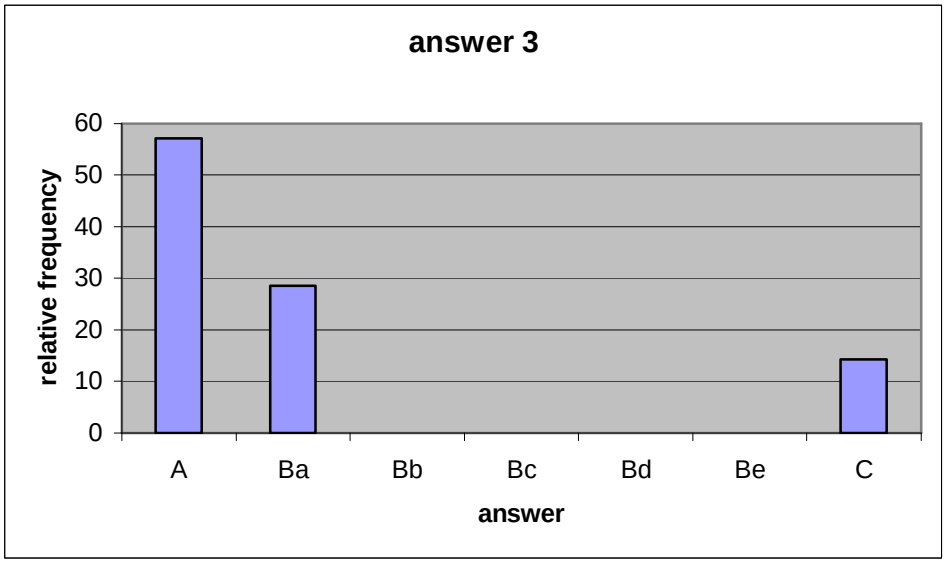
> You indicated in the Fabulous Flamingo Questionnaire that you will not be holding (tailor to zoo, which species, e.g. *Phoenicopterus chilensis*) in the future, but did not

indicate that the (indicate numbers and species, e.g. 3.4.0 *Phoenicopterus chilensis*) will be available to other zoos. Could you please specify what the plans are for these birds?

In total 5 zoos answered this question, and the results are shown in Table 3 and Figure 7. Multiple answers were possible.

Table 3: Results question 3: plans for specific flamingos (n=5 zoos, 7 options selected)

Answer 3	**frequency**	**rel. frequency**
3A; Trading with other zoos to increase the number of the (name species e.g. *Phoenicopterus ruber)* chosen to remain in the collection	4	57,14
3Ba; Loan	2	28,57
3Bb; Trade	0	0,00
3Bc; Purchase	0	0,00
3Bd; Donation	0	0,00
3Be; no answer	0	0,00
3C; other, please explain	1	14,29
Total	7	100,00



A	Trading with other zoos
Ba	Loan
Bb	Trade
Bc	Purchase
Bd	Donation
Be	No answer
C	Other

Figure 7: plans for second species flamingos no loner to be held in collection (n=7)

In short: most of the 5 zoos who answered Question 3 want to trade the second species held to other zoos in return for individuals of the species chosen to remain in the collection.

3.4 Question 4: holding one species per enclosure, building second enclosure or other solution for species.

Three questions were asked to zoos that indicated in the Fabulous Flamingo Questionnaire that they hold more than one species of flamingos in the same enclosure, and wish to continue doing so:

Holding more than one species of flamingo in the same enclosure is strongly discouraged in order to avoid potential hybridisation and reduce potential stress to the birds. Would you consider only holding one species (with 20-25 individuals for non-breeding flocks, and more than 40 for breeding flocks)?

If you want to continue holding both species, would you consider building a second enclosure for the second species, but holding both species in adequate numbers (20-25 for non breeding flock, and more than 40 for breeding flocks)?

If you would be willing to hold only one species and will not build a second enclosure for the other species, what would be the preferred solution for the second (or more) species?

The results are given in Table 4 and Figures 8, 9, 10 and 11 for the 27 zoos that answered this set of questions.

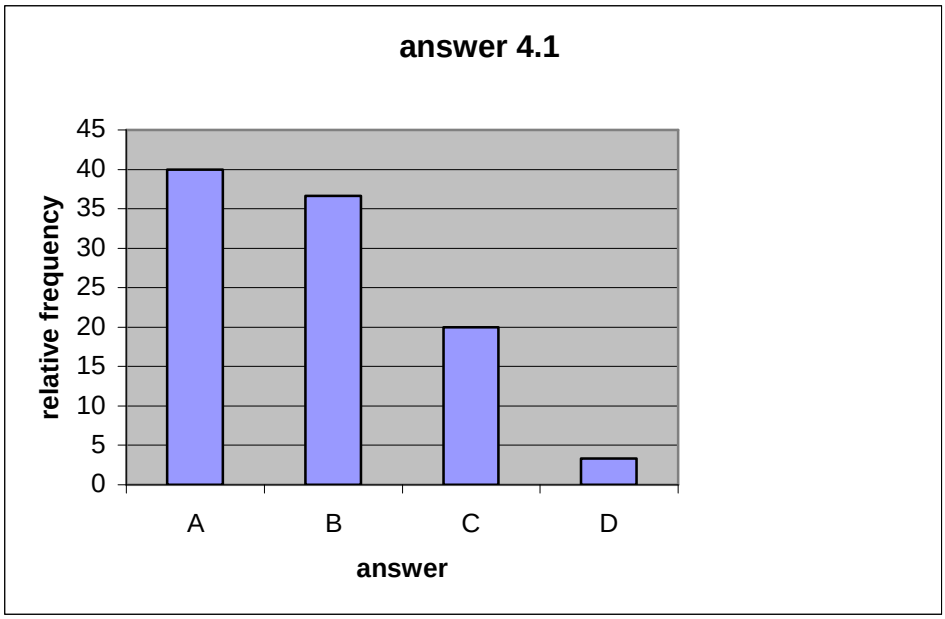
Table 4: Results question 4: holding one species per enclosure, building second enclosure or other solution for species (n=27 zoos, 30 options selected)

	Frequency	**rel. frequency**
answer 4.1		
4A; consider building a new enclosure	12	40,00
4B; consider giving up a species	11	36,67
4C; continue as previously planned	6	20,00
4D; no answer	1	3,33
Total	30	100,00
answer 4.2 (4.1 A: anticipated time frame to built a new enclosure)		
Aa; 0-1 years	0	0,00
Ab; 2-3 years	5	41,67
Ac; 4-5 years	2	16,67
Ad; no answer	5	41,67
Total	12	100,00
Answer 4.3 (4.1 B: preferred transaction type if giving up a species)		
Ba; loan	4	22,22
Bb; trade	8	44,44
Bc; purchase	0	0,00
Bd; donation	4	22,22
Be; no answer	2	11,11
Total	18	100,00

Zoos that answered 4.1C, indicating that they want to continue as previously planned were requested to explain why. The following reasons were given:

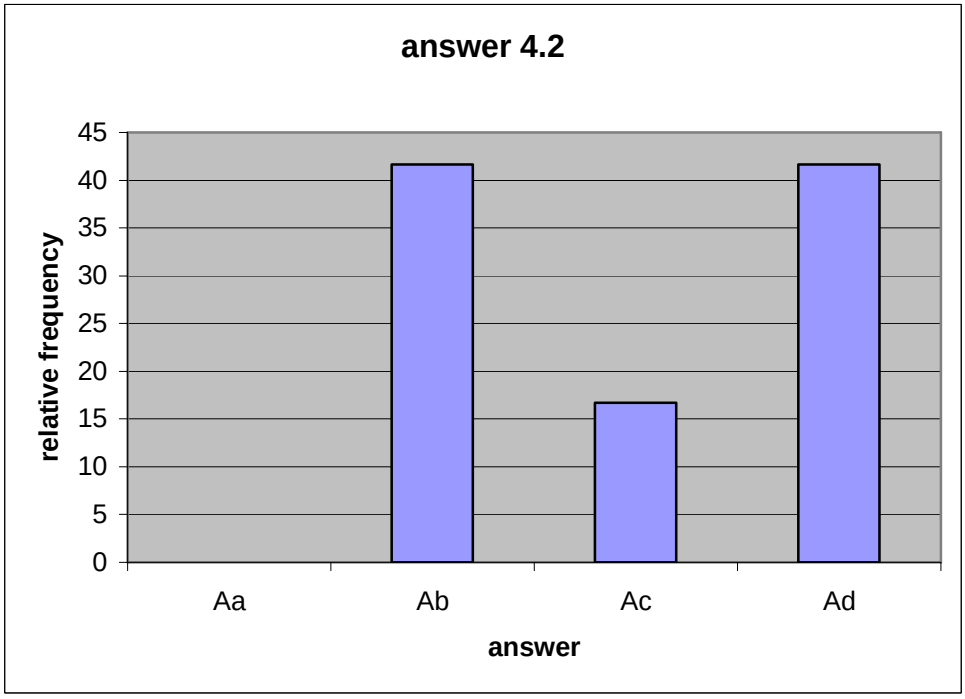
- for ethical reasons
- no changes needed

- no enlarging and no changing
- not enough space
- enlarging enclosure



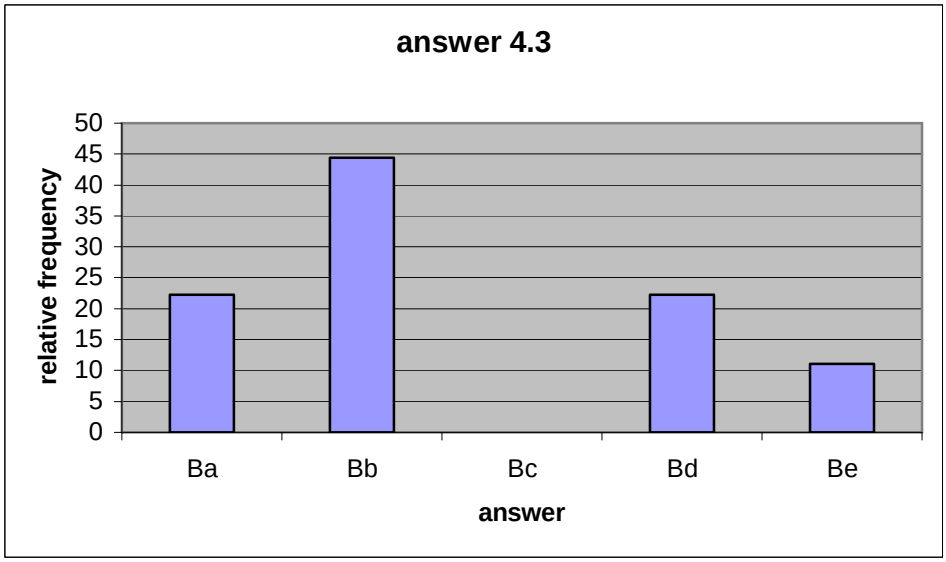
A	Consider building a new enclosure
B	Consider giving up a species
C	Continue as previously planned
D	no answer

Figure 8: holding one species per enclosure, building second enclosure or other solution for species (n=27 zoos, 30 options selected)



Aa	0-1 years
Ab	2-3 years
Ac	4-5 years
Ad	No answer

Figure 9: anticipated time frame to built a new enclosure (n=12)



Ba	Loan
Bb	Trade
Bc	Purchase
Bd	Donation
Be	No answer

Figure 10: preferred transaction type (n=11 zoos, 18 options selected)

In short: 44.4% of the 27 zoos who answered Question 4 are considering building a new enclosure, and 41.7% could build the enclosure in 2-3 years. Many (40.7%) will consider giving up the species, and most would like to trade for other animals.
A fifth of the responding zoos wish to continue holding two species together.

3.5 Question 5: strategies to provide flamingos to other zoos (offered)

The following question was asked to zoos with breeding flocks that had indicated in the Fabulous Flamingo Questionnaire that they could provide flamingos to other zoos:

> Would it be possible to increase the number of flamingos you can provide to other zoos in the next few years by one or more of the following management strategies?

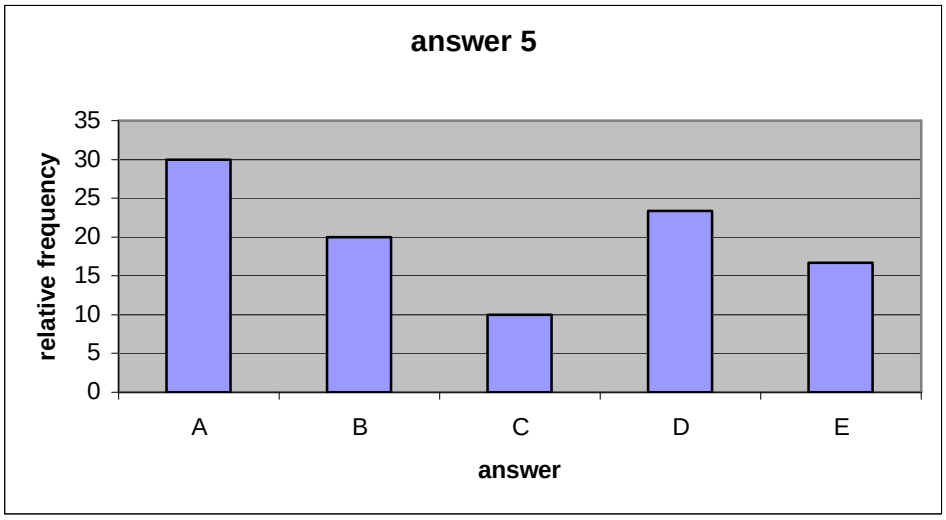
The results are given in Table 5 and Figure 10.5 for the 18 zoos answered this question. Multiple answers were possible.

Table 5: Results question 5: strategies to increase number flamingos provided to other zoos (n=11, 30 options selected)

answer 5	**frequency**	**answer**	**Rel. frequency**
5A; Give fertile eggs to foster parents within own colony	9	A	30,00
5B; Give fertile eggs to foster parents in another colony	6	B	20,00
5C; Hand-rearing of chicks at own institution for later distribution to other zoos	3	C	10,00
5D; Hand-rearing of chicks carried out by receiving institution	7	D	23,33
5E; No, reason	5	E	16,67
Total	30		100,00

If zoos answered 5E, which indicating that they are not willing to provide flamingos to other zoos, they were asked to give a reason for this. The following reasons were given:

- not in a position yet to surplus any P. ruber, rather I would like to increase the size of the colony to 100 birds. We hand-rear chicks at present from first clutch to get them to double clutch
- in the moment we have no problems with rearing. But problems with other birds. (Grey herons kill some chicks). But we will work on this.
- we prefer natural breeding
- So far only pair of P. roseus had produced one healthy chick per year
- We do not have a stable breeding group and will not risk it



A	Giver fertile eggs to foster parents within own colony
B	Give fertile eggs to foster parents in another colony
C	Hand-rearing of chicks at own institution for later distribution to other zoos
D	Hand-rearing of chicks carry out by receiving institution
E	No

Figure 10.5: strategies to provide more flamingos to other zoos (n=18, 30 options selected)

In short: 33% of the18 zoos who answered question 5 would give fertile eggs to foster parents within own colony, 20% would give fertile eggs to foster parents in another colony, 10% would hand-rear the chicks at own institution for later distribution to other zoos, 23.3% would hand-rear chicks carried out by receiving institution and 27.8% did not want to increase the number of flamingos they provide other zoos.

3.6 Question 6: strategies to provide flamingos to other zoos

Zoos with breeding flocks that did NOT indicate in the Fabulous Flamingo Questionnaire that they could give young to other zoos were asked:

> Would it be possible to provide a number of flamingos to other zoos in the next few years by one or more of the following management strategies?

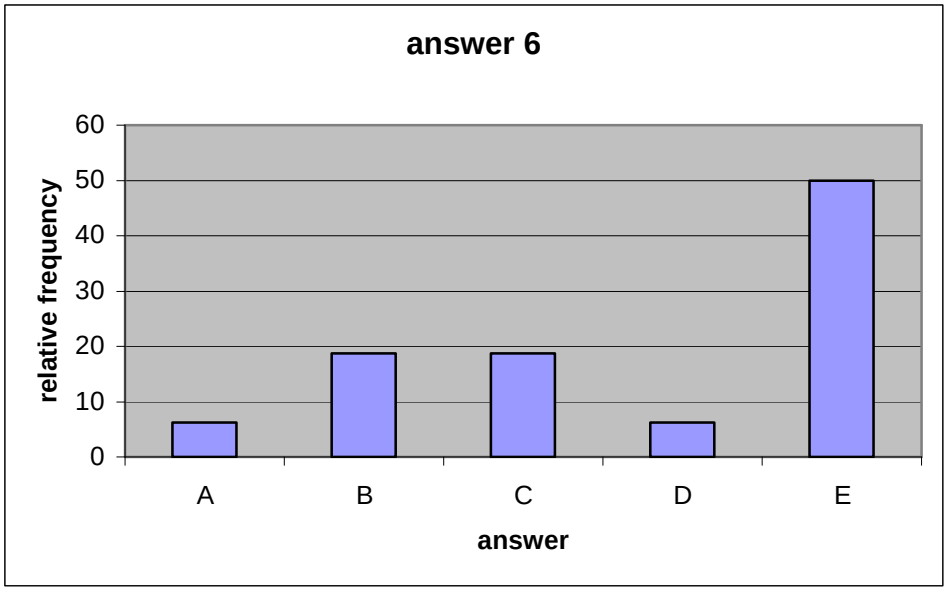
The results are given in Table 6 and Figure 11 for the 12 zoos that answered this question. Multiple answers were possible.

Table 6: Results question 6: strategies to provide flamingos to other zoos (not offered)(n=12 zoos)

answer 6	frequency	rel. frequency
6A; Give fertile eggs to foster parents within own colony	1	6,25
6B; Give fertile eggs to foster parents in another colony	3	18,75
6C; Hand-rearing of chicks at own institution for later distribution to other zoos	3	18,75
6D; Hand-rearing of chicks carried out by receiving institution	1	6,25
6E; No, reason	8	50,00
Total	16	100,00

Zoos answering 6E, indicating that they are not willing to provide flamingos to other zoos using these strategies were asked to give a reason for this. The following reasons were given:

- enlarge our collection
- too much work and too much disturbance
- keeping collection
- no changes at this time
- not yet possible
- poor breeding success
- provide young *roseus* at the end of summer
- influence with colony less breeding results



A	Giver fertile eggs to foster parents within own colony
B	Give fertile eggs to foster parents in another colony
C	Hand-rearing of chicks at own institution for later distribution to other zoos
D	Hand-rearing of chicks carry out by receiving institution
E	No

Figure 11: strategies to provide flamingos to other zoos (n=12)

In short: One-third of the 12 respondents with breeding groups that indicated in the Fabulous Flamingo Survey they could not provide other zoos with flamingos, now thought they could when asked in this context.

3.7 Question 7: send some flamingos to another zoo

Zoos with non-breeding flocks of 50 + individuals that had not indicated in the Fabulous Flamingo Questionnaire that they are willing to give some away to other zoos were asked:

Would you be willing to consider sending some flamingos to a zoo that is striving to increase flamingo group size in the interest of the well-being and breeding potential of the flamingos?

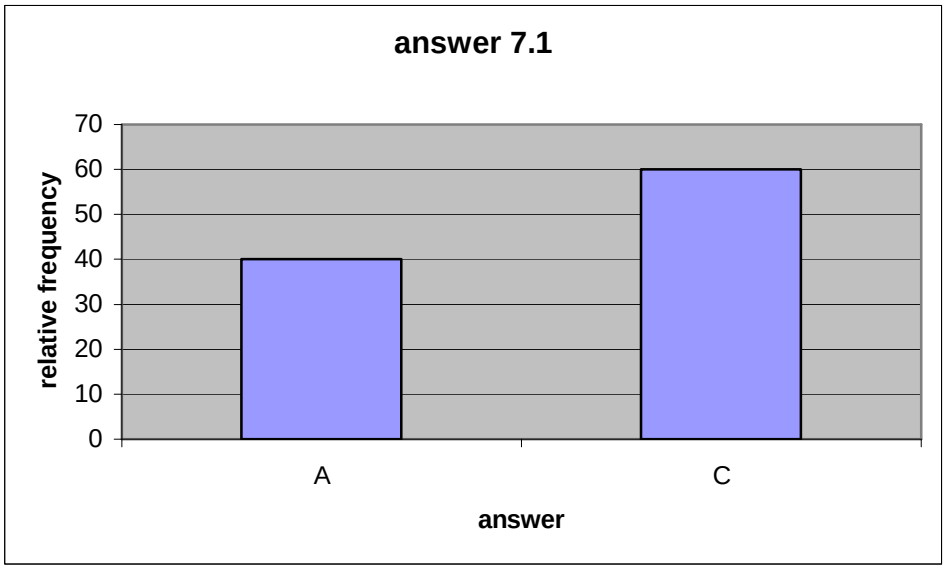
The results are given in Table 7 and Figures 12 and 13 for the 5 zoos that answered this question.

Table 7: Results Question 7: willingness send some flamingos to another zoo (n=5)

answer 7.1	**frequency**	**rel. frequency**
7A; Yes	2	40,00
7C; No	3	60,00
Total	5	100,00
answer 7.2 (7.1 A: preferred transaction type if willing to send some flamingos to another zoo)		
Ba; Loan	1	33,34
Bb; Trade	1	33,33
Bc; Purchase	1	33,33
Bd; Donation	0	0,00
Total	3	100,00

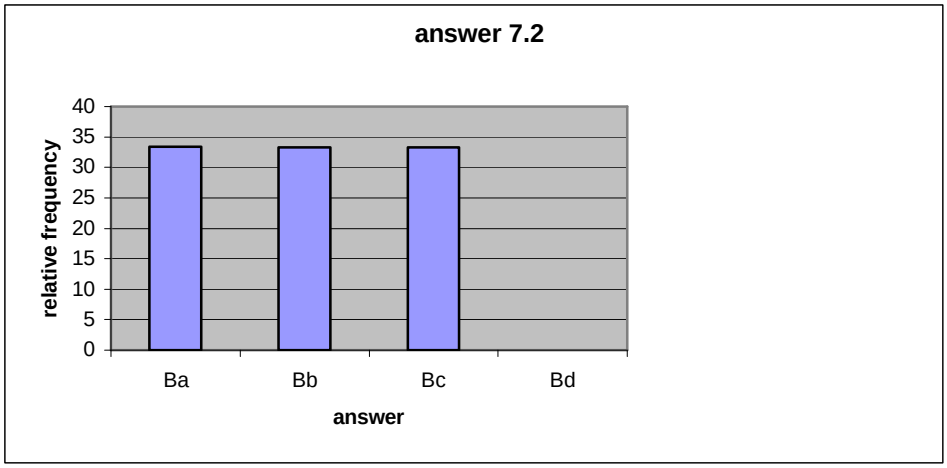
If zoos answered 7C, which indicated that zoos are not willing to send flamingos to another zoo, they were asked to give a reason. The following reasons were given:

- await breeding results
- increase own breeding results first
- keep a bigger group for breeding



A	Yes
C	No

Figure 12: send some flamingos to another zoo (n=2, 3 options selected)



Ba	Loan
Bb	Trade
Bc	Purchase
Bd	Donation

Figure 13: preferred transaction type

In short: 60% of the 5 zoos who answered Question 7 are not willing to send some flamingos to another zoo that is striving to increase their flamingo group size, while 40% of the zoos are willing to send some flamingos to another zoo and want to loan, trade or sell them.

3.8 Question 8: more successful breeding results

Respondents from zoos that indicated in the Fabulous Flamingo Questionnaire that they are planning on increasing numbers by breeding own stock but did not breed any chicks at all, or only a few individuals(i.e. < 6 in five years total) between 2000-2004 years were asked the following question:

> You indicated in the Fabulous Flamingo Questionnaire that you plan to increase group size of the flamingos held at your zoo through reproduction at your zoo. The data that you sent on breeding results indicated that flamingos have not bred at all or only in small numbers in the last five years at your zoo. Do you have good reason to believe that your colony will be more successful in the next five years?

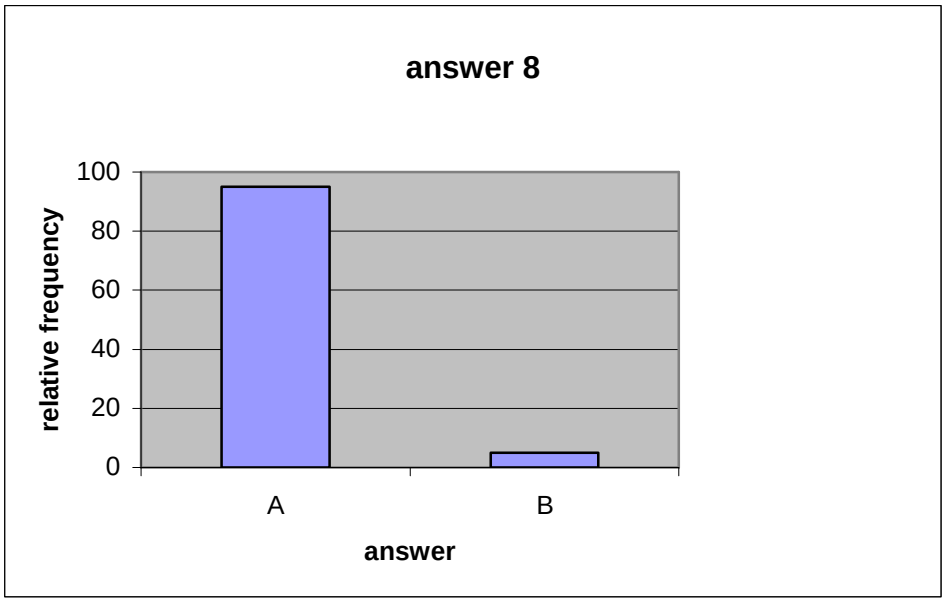
The results are given in Table 8 and Figure 14 for the 59 zoos that answered this question.

Table 8: Results Question 8: more successful breeding results (n=59)

answer 8	**frequency**	**rel. frequency**
8A; Yes	56	94,92
8B; No	3	5,08
	59	

If zoos answered 8B, indicating that they have no reason to believe their colony will be more successful in the next five years, they were asked to give a reason for this. The following reasons were given:

- no answer
- until we get a new facility we do not expect the breeding to be more successful.



A	Yes
B	No

Figure 14: more successful breeding results (n=59)

In short: 94.9% of the 59 respondents who answered Question 8 believe that their colonies will be more successful in the next five years.

3.9 Question 9: trade young to avoid inbreeding

The following question was asked for zoos that indicated that they are planning on increasing numbers by breeding own stock but rear < 10 young per year (also for zoos that bred between 1-6).

> It has been shown both in the wild and in captivity that flamingos choose a similarly-aged bird (same or one year difference) for the breeding partner when possible, this is particularly true in captivity for the first partner. This means that if only a few pairs breed, it is likely that the offspring will pair up with a brother or sister. Are you willing to trade young from your colony with other zoos to avoid inbreeding?

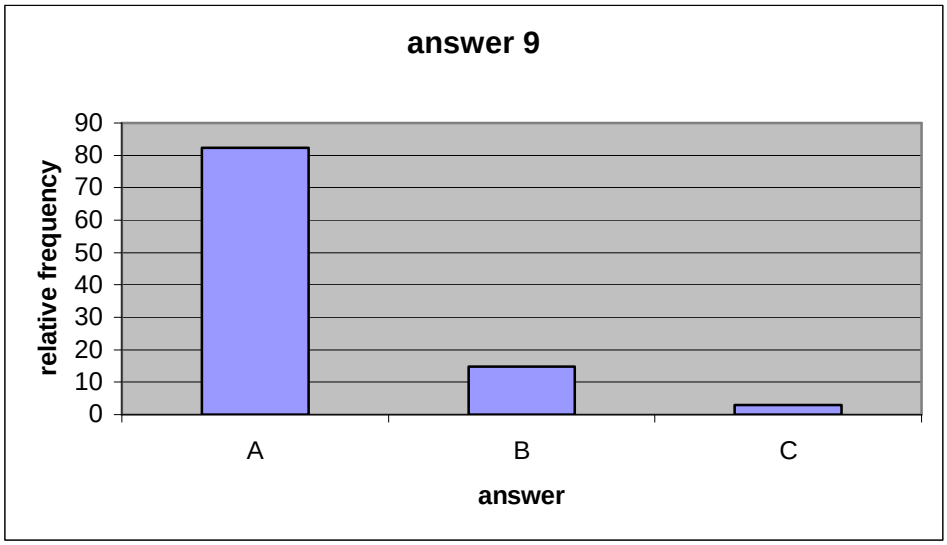
The results are given in Table 9 and Figure 15 for the 34 zoos answered this question.

Table 9: Results question 9: trade young to avoid inbreeding (n=34)

answer 9	**frequency**	**rel. frequency**
9A; Yes	28	82,35
9B; No	5	14,71
9C; no answer	1	2,94
	34	100,00

If zoos answered 9B, which indicated that zoos are not willing to trade young to avoid inbreeding, they were asked to give a reason. The following reasons were given:

- no need for it
- not enough birds
- our birds are not inbreeding
- problems to catch them



A	Yes
B	No
C	No answer

Figure 15: trade young to avoid inbreeding (n=34).

In short: 82.4% of the 34 zoos who answered Question 9 are willing to trade young from their colony with other zoos to avoid inbreeding, 14.2% are not willing to trade young to avoid inbreeding. 2.9% did not answer the question.

3.10 Question 10: acquire flamingos from other zoos

The following question was asked for zoos that indicated that they wanted to acquire flamingos from other zoos:

> You noted on the Fabulous Flamingo Questionnaire that you intend to acquire flamingos from other zoos in the next five years. It was clear from the survey that the number of flamingos that zoos intend to offer to other zoos will by no means match the demand for flamingos. Could you please indicate how far you are in negotiations to acquire flamingos from another zoo?

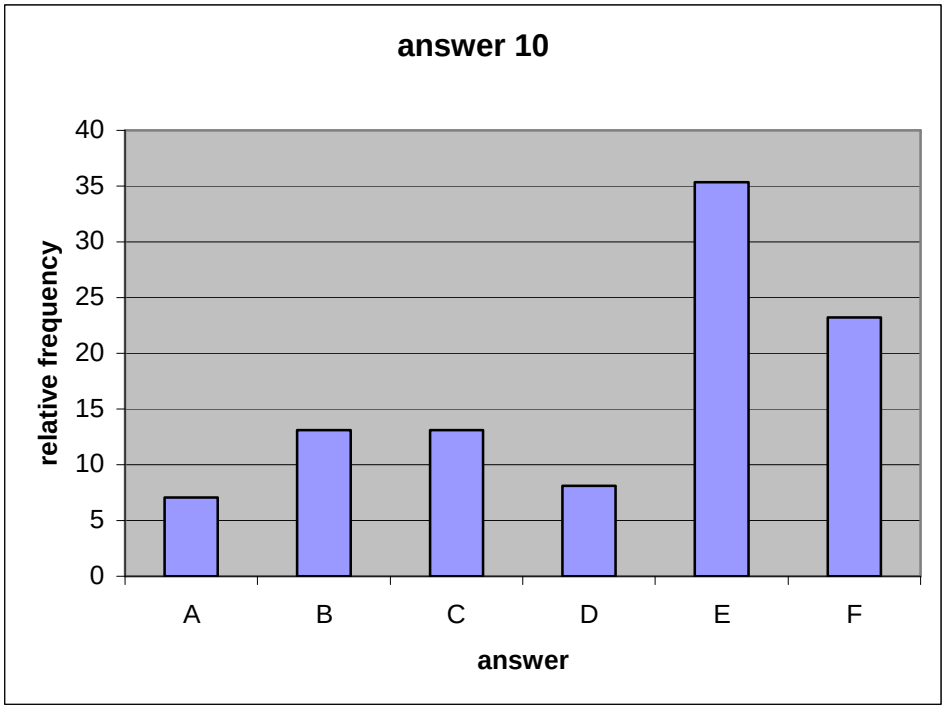
The results are given in Table 10 and Figure 16 for the 62 zoos answered this question. Multiple answers were possible.

Table 10: Results question 10: acquire flamingos from other zoos (62 zoos)

answer 10	**frequency**	**rel. frequency**
10A; Transaction in progress	7	7,07
10B; Transaction planned	13	13,13
10C; Transaction possibility discussed with another zoo	14	14,14
10D; Plans to approach a particular zoo for flamingos	13	12,12
10E; Plans to watch the EAZA available and wanted list to find available flamingos	35	35,35
10F; Other	18	18,18
	99	100,00

If respondents answered 10F, indicating that they are considering other measurements to acquire flamingos from other zoos, they were asked to indicate how they planned to do this. The following answers were given:

- Bringing in birds from Cuba
- await advice from the TAG
- approach private breeder
- breeding own stock and hold on to the offspring
- check availability
- collecting information from non EAZA zoos and private breeders
- contact with zoo-trade companies
- contact private breeders
- monitoring local market
- no contacts for the moment
- we plan to face-out
- no definite plans
- import birds to UAE



A	Transaction in progress
B	TransEAZA collective collection plan action list ned
C	Transaction possibility discussed with another zoo
D	Plans to approach a particular zoo for flamingos
E	Plans to watch the EAZA available and wanted list to find available flamingos
F	Other

Figure 16: acquire flamingos from other zoos

In short: Only 7 (11.3%) of 62 zoos who answered question 10 have transactions in progress to acquire flamingos from other zoos, 16.1% have transaction planned, 22.3% have discussed possibilities for a transaction, 21.0% have plans to approach a particular zoo for flamingos, 56.5% have plans to watch the EAZA available and wanted list to find available flamingos and 29.0% are considering other measuremes.

3.11 Question 11: stage of development in which flamingos could be received

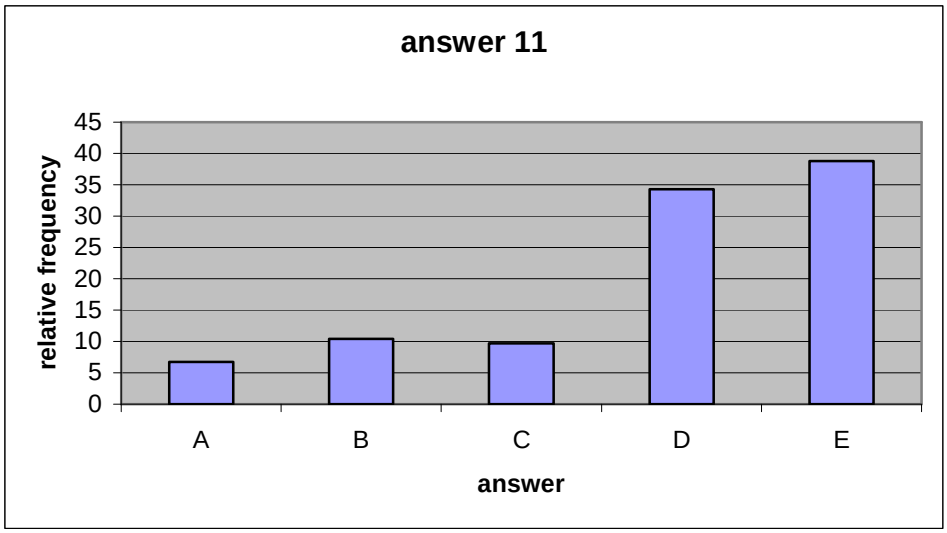
The following question was asked to respondents from zoos that indicated in the Fabulous Flamingo Questionnaire that they wanted to acquire flamingos from other zoos:

> It may be more efficient for zoos that can provide flamingos to another zoo to send these as eggs or young birds. Could you please indicate which stage of development your zoo could receive flamingos:

The results are given in Table 11 and Figure 17 for the 61 zoos that answered this question. Multiple answers were possible.

Table 11: Results question 11: stage of development in which flamingos could be received

answer 11	frequency	rel. frequency
11A; as eggs to be given to foster parents within your own colony	9	6,72
11B; as eggs to be artificially incubated and the young hand-reared	14	10,45
11C; as young to be hand-reared	13	9,70
11D; as immature birds no longer dependant on the parents for food	46	34,33
11E; as adults (e.g. two years or older)	52	38,81
	134	100,00



A	as eggs to be given to foster parents within your own colony
B	as eggs to be artificially incubated and the young hand-reared
C	as young to be hand-reared
D	as immature birds no longer dependant on the parents for food
E	as adults (e.g. two years or older)

Figure 17: stage of development in which flamingos could be received (n=61, 134 options selected)

In short: 6.7% of the 61 zoos who answered question 11 can receive flamingos as eggs to be given to foster parents within their colony, 10.5% can receive flamingos as eggs to be artificially incubated and the young hand-reared, 9.7% can receive flamingos as young to be hand-reared, 34.3% can receive flamingos as immature birds no longer dependant on the parents for food and 38.8% can receive flamingos as adults.

3.12 Question 12: acquire flamingos from private breeders

Respondents from zoos that indicated in the Fabulous Flamingo Questionnaire that they wanted to acquire flamingos from private breeders were asked the following question:

> You noted in the Fabulous Flamingo Questionnaire that you intend to acquire flamingos from private breeders within the next five years. It was clear from the survey that a large number of zoos intend to acquire flamingos from private breeders. Could you please indicate how far you are in negotiations to acquire flamingos from a private breeder?

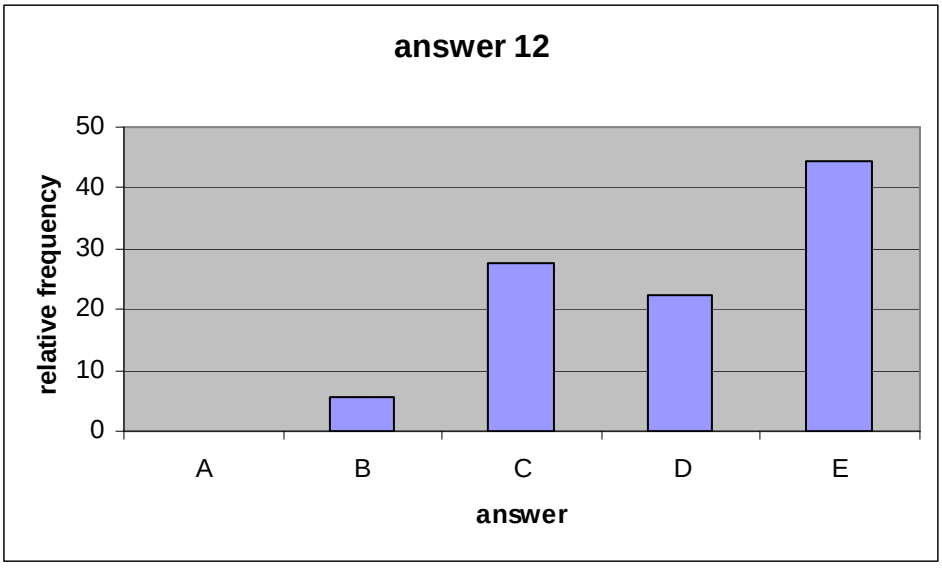
The results are given in Table 12 and Figure18 for the 16 zoos that answered this question. Multiple answers were possible.

Table 12: Results Question 12: acquire flamingos from private breeders

answer 12	frequency	rel. frequency
12A; Transaction in progress	0	0,00
12B; TransEAZA collective collection plan action list ned	1	5,56
12C; Transaction possibility discussed with breeder	5	27,78
12D; Plans to approach a particular private breeder for flamingos	4	22,22
12E; Other (please specify)	8	44,44
	18	100,00

If zoos answered 12E, which indicated that zoos are considering other measuremes to acquire flamingos from private breeders, they were asked to give a reason for this. The following reasons were given:

- already acquired flamingos this year from private breeders
- dealer didn't approved to the deal
- no actual plans right now
- no answer
- plan to import lesser flamingos



A	Transaction in progress
B	TransEAZA collective collection plan action list ned
C	Transaction possibility discussed with dealer/broker
D	Plans to approach a particular dealer/broker
E	Other

Figure 18: acquire flamingos from private breeders (n=16)

In short: only 1 (5.6%) of the16 zoos who answered question 12 have transactions planned to acquire flamingos from private breeders, 27.8 have transaction possibility discussed with breeder, 22.2% have plans to approach a particular private breeder for flamingos and 44.4% are considering other measuremes.

3.13 Question 13: acquire flamingos from the wild

Respondents from zoos that indicated in the Fabulous Flamingo Questionnaire that they wanted to acquire flamingos from the wild were asked the following question:

> You noted in the Fabulous Flamingo Questionnaire that you intend to acquire flamingos from the wild within the next five years. Could you please indicate how far you are in negotiations to acquire flamingos from the wild?

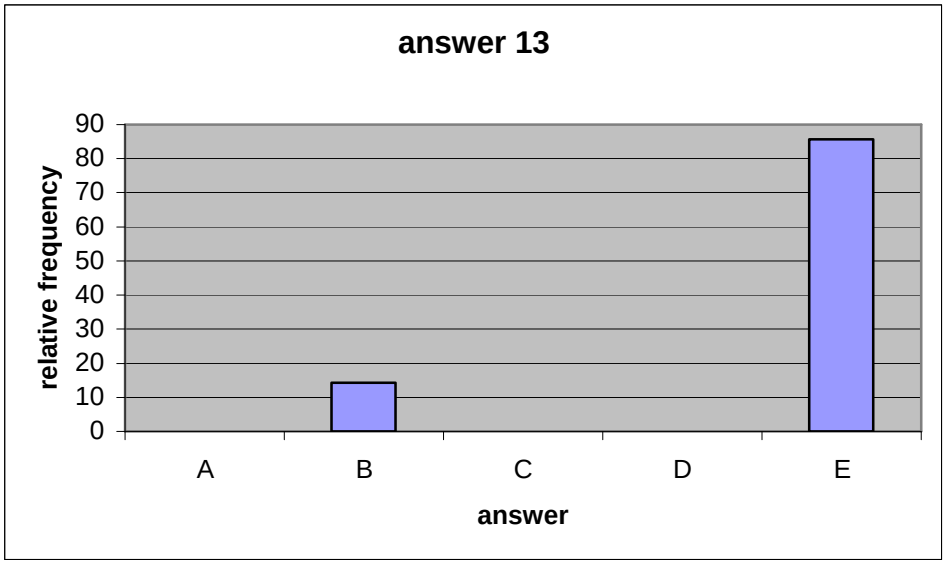
The results are given in Table 13 and Figure 19 for the 7 zoos answered this question.

Table 13: Results question 13: acquire flamingos from the wild

answer 13	**frequency**	**rel. frequency**
13A; Transaction in progress	0	0,00
13B; TransEAZA collective collection plan action list ned	1	14,29
13C; Transaction possibility discussed with dealer/broker	0	0,00
13D; Plans to approach a particular dealer/broker flamingos	0	0,00
13E; Other (please specify)	6	85,71
	7	100,00

Respondents answering 13E, indicating that the zoos are considering other measuremes to acquire flamingos from the wild, they were asked to explain. The following reasons explanations were given:

- will receive birds out of Mexico
- import *ruber* from Cuba
- no answer
- possibly receive flamingos from Fuengirola Zoo



A	Transaction in progress
B	TransEAZA collective collection plan action list ned
C	Transaction possibility discussed with dealer/broker
D	Plans to approach a particular dealer/broker
E	Other

Figure 19: acquire flamingos from the wild

In short: 14.3% of the 7 zoos who answered question 13 have a transEAZA collective collection plan action list ned to acquire flamingos from the wild within the next 5 years, 85.7% are considering "other" means.

3.14 Question 14: holding more than 40 flamingos for a breeding flock

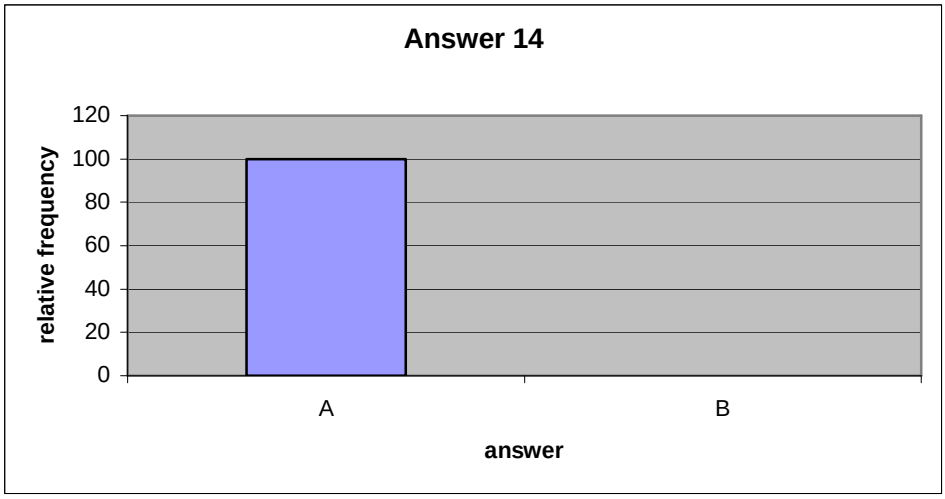
Respondents from zoos that indicated in the Fabulous Flamingo Questionnaire that they wished to hold a breeding group of flamingos but are not planning to enlarge their group to at least 40 flamingos but had facilities for more than 40 flamingos were asked the following question:

> It is highly recommended for consistent breeding results that flamingos be held in groups of more than 40 individuals of the same species. We really recommend more than 40 birds for breeding flocks and 20-25 birds for non-breeding flocks.
> Would you consider holding more than 40 flamingos for a breeding flock in the future?

The results are given in Table 14 and Figure 20 for the 6 zoos that answered this question.

Table 14: Results question 14: holding more than 40 flamingos for a breeding flock

answer 14	**Frequency**	**rel. frequency**
14A; Yes	6	100,00
14B; No	0	0,00
	6	100,00



A	Yes
B	No

Figure 20: holding more than 40 flamingos for a breeding flock (n=6)

In short: 100% of the 6 zoos that had indicated that they wanted to hold a smaller flock in the Fabulous Flamingo Survey would consider holding more than 40 flamingos for a breeding flock in the future when asked in this context.

4. Conclusions and Discussion

- The response to this first attempt at developing an interactive regional-institutional EAZA collection plan action was generally quite positive. A total of 110 of the 157 European zoos replied in time to be included in the report, and 129 in the EAZA collective collection plan action list. Furthermore most comments were very supportive.

- Unfortunately not all the responses could be analyzed for the report because their was not much time for response available before the data had to be analyzed.

- Most (9 of 14 answering) zoos that have facilities for less than 20 flamingos and had no plans for expansion in the Fabulous Flaming Survey replied that they would consider enlarging their facilities within the next five years and acquiring more flamingos.

- More than half (12 of the 20 answering) zoos that had indicated in the Fabulous Flamingo Survey that they want to hold a breeding group of flamingos but did not have facilities for more than 40 flamingos would consider enlarging their facilities within the next 5 years to hold a breeding group of more than 40 flamingos.

- Many (23 of the 30 answering) zoos that hold more than one species of flamingos in the same enclosure and had indicated that they would continue doing so in the Fabulous Flamingo Survey will now consider only holding one species per enclosure. Almost equal proportions (36.6%) were willing to send species away, and 40% were willing to consider building a new enclosure.

- Approximately than two-thirds of the zoos that will consider building a new enclosure or enlarging an existing one anticipate being able to do so in the next five years, the others did not answer this question or did not anticipate being able to carry this out in the next five years.

- Almost all (56 of the 59 answering) zoos that indicated in the Fabulous Flamingo Survey that they are planning on increasing numbers by breeding own stock but do not breed flamingos at all, or only a few individuals over the last 5 years, feel that they have a good reason to believe that their colony will be more successful in the next 5 years. It would be very interesting to resurvey these zoos again in five years to assess whether they were indeed more successful.

- More than half (35 of 62 answering) zoos that had indicated in the Fabulous Flamingo Survey that they wanted to acquire flamingos from other zoos are planning to find available flamingos by watching the EAZA Available and Wanted list. Few flamingos are ever offered on this list, therefore zoos that are seriously wish to acquire flamingos are encouraged to take a more active approach.

- Most of the 62 answering zoos that want to acquire flamingos from other zoos wish to acquire only independent birds when no effort is required to rear them. Less than 10% of the zoos were willing to take flamingos at a still-human dependant stage. Zoos who are willing to take flamingos at a still-human dependant stage may therefore have a distinct advantage in acquiring flamingos from other zoos.

- Lesser flamingos are generally held in small groups and zoos are unwilling to part this species. There is little chance that Lesser flamingos will breed in the small groups are held in, and additionally adult mortality is higher than for all flamingos except the Caribbean flamingo (King and van Weeren 2005). Unless European zoos that hold this species either work together to improve breeding by placing individuals in larger groups in suitable enclosures or by bringing a substantial number of Lesser flamingos into the population, the current population will dwindle.

- Zoos preferred loans (10 times selected) and trades (13 times selected) over purchases (2 times selected) and donations (5 times selected) as transaction types that they would like to use to distribute their flamingos.

- Only half of the respondents from the 16 zoos with breeding colonies that had stated in the Fabulous Flamingo Questionnaire they were unable supply any flamingos to other zoos were willing to consider supplying flamingos in this follow up survey, and although most (83.3%) of the zoos already willing to supply flamingos thought they could increase the number, breeding of flamingos in European zoos can in no way match the need for flamingos.

- The reduction of species by zoos now holding multiple species will ease the deficit some, but not much as in many cases the zoos need to trade to acquire more individuals of the species they chose to keep. The Fabulous Flamingo Questionnaire already indicated a large deficit in flamingos needed to achieve collective institutional goals that respondents reported, with an estimated deficit of 2401 flamingos based on what zoos thought they could supply and would need over the next five years and a deficit of 2716 based on population growth in the last five years for the four species discussed here. While it is wonderful that so many zoos reported in the Follow Up questionnaire that they are prepared to change their institutional goals to meet the TAG's three basic management targets, the deficit then becomes much larger still.

- The results on this report are processed in an EAZA collective collection plan action list . The target of this EAZA collective collection plan action list is to establish a healthy flamingo population in the European zoos. Because each zoo has a unique situation regarding their needs and possibilities. Therefore we felt the most helpful way to approach an EAZA collective collection plan action list would be to provide the information so that zoos can develop their own actions, thereby meeting their individual goals and helping to achieve European population goals.

- Any questions about the different measures in the EAZA collective collection plan action list will be answered by Cathy King.

- Zoos have to understand the need of a healthy flamingos population. It's important to give attention to the welfare of the flamingos. Hopefully the EAZA collective collection plan action list is a good beginning to establish this.

5. Recommendations

In this chapter recommendations about conducting such a project are given which can be used for continuing research in this area.

- A recommendation to the University Inholland of professional education is to ensure that students can start immediately with such a project. The full 20 weeks should be devoted to the project.

- A follow-up survey should be made in five years to see if many zoos have changed their management according to their responses to this survey.

- The TAG needs to develop a strategy to maximize population growth and to convince zoos to follow the strategy.

Appendix I
Comments offered by Fabulous Flaming Questionnaire Follow Up Survey respondents

Amersfoort:
a manual about how and when to collect the eggs and how to transport them to other institutes

Arnhem:
It might be difficult to manage a group like this, this way, but it is worth the try

Avintes:
We find this attempt on collection management quite interesting and hope some success can be achieved. We think the questionnaire was an interesting way of obtaining statistic data and the response rate seems to be surprisingly satisfactory. Given the results it might be an interesting way to assess the non-studbook included species populations. Congratulations on the good work

Banham:
We might be able to supply eggs at a later date, but I would like to increase our flock-size first and also improve the ratio of young to old birds as we have an aging group. The success rate of our group this year was poor in relation to the number of eggs laid (30 eggs only 3 chicks hatched/ one DNS). I am considering artificial incubation and fostering out next year as this would enable us to maximise breeding potential and also remove infertile eggs at a much earlier stage. Many eggs were broken or rolled of the nests this year during incubation, several of these were fertile and we hope to improve the eggs laid/chicks hatched ratio next year presuming that they breed again. I think that once we reach 50 birds we might be willing to release some eggs and some birds also.

Basel:
As you know, we are following, so far as possible, a hands-off strategy in breeding our flamingos. The proposed strategies are a very useful first step in the direction of the coordination of flamingo management in different zoos. But nevertheless, from the genetic point of view I think that the most urgent problem will be to extend the number of breeding birds instead of producing sibling and siblings of already existing genetic combinations. Would it be possible, to bind zoos receiving birds - bread elsewhere - in order to enlarge their number, to give away a small number (1 - 3) of their own non breeding stock to a zoo with a well running breeding group. I think such a strategy could help to lead to new genetic combinations and to improve the genetic base of the flamingos living in European zoos. In our group, those birds which have been introduced into our colony in very small numbers became integrated rather quickly leading to breeding even in those birds which hadn't bred in the last 20 years or more, if they had bred at all. As you know we urgently are looking at least for females not related to our birds. If we will find a possibility to get such birds this will have priority, also if we have to provide our young

Bern:
I appreciate your efforts very much.

Bochum:
If you have any idea where we can get the missing 9 females of Phoenicopterus ruber roseus (without afterwards having to declare ourselves bankrupt) we would be pleased to hear of you…!

Bristol:
removal of eggs for hand rearing could potentially increase the reproduction of flamingos in captivity. Time and staff numbers would probably be the most important factors in achieving this method. Hand reared birds here at Bristol Zoo have gone on to show signs of reproduction (egg laying). The number of fertile eggs lost throughout the EAZA region could potentially be a significant number

Burford:
Over the last 2 years we have been monitoring mate selection of our flock, various behaviours occurring including egg and chick stealing. Same sex pairings (both male and female) and trio nesting. Would be interested to know if any other flocks have same behaviours happening, and if so is this something worth investigating further???

Chemnitz:
General remark: it is not so urgent to enlarge our flamingo stock. And keeping of more than 25 birds are not possible because of our limited space capacity

Cleres:
Theft may be the main problem to your efforts!!!!

Dompiere:
I find your way very well of approaching the problems of the flamingos in the zoos while using of such questionnaires. Indeed it's necessary to still test to stop the mixture of the species

Doue- Fontaine:
Thank you for this great work which will be helpful for all.

Dublin:
We will have to look at our flock to see which had paired and bred over the last few years with a view of exchanging those that did not breed, possibly due to not having an age-related companion to pair with. Have other zoos got identified birds that are not possibly breeding due to this reason?

Edingburg:
I think that this approach was definitely needed given the breeding records across collections. I do hope that zoos that have the facility to provide birds to other collections will do so and a high level of co-operation is achieved. I agree that zoos that hold small mixed species flocks should be encouraged to hold a single species that would have a higher chance of reproducing and playing an active role in the taxon management. Similarly those zoos (such as Edinburgh) currently holding smaller flocks attempt to put in place the correct conditions re group size for increasing breeding and welfare.

Fota:
Would be happy to swap birds of breeding age a present in Fota, for immature birds, so that breeding age birds can be mixed with groups in such a way as to increase breeding potential

Frankfurt:
A lot of zoos keeping just a few mixed specimen's or without good enclosures need help. But let others who study flamingos on there own going their own way!

Givskud:
We have found the land to build a big new facility for flamingo, but right now we want to see what happens with the Avian Influenza situation, before we keep on working on this project.

Heidelberg:
The main improvement would be the implementation of the three points mentioned in your foreword.

Helsinki:
To collect a waiting list of zoos (in EAZA) willing to get flamingos: those who are closest to the effective breeding colony size (40) could get birds first. This hopefully leads to more colonies breeding efficiently. Zoos with smaller groups will then have to wait longer for a larger group, but this approach could speed up the breeding.

Hilvarenbeek:
Identify the different enclosures, sizes etc. Identify the different experiences with breeding identify the number of institutions wanting to start with flamingos

Kessenland:
I think that it is very unlikely that the owners of Suffolk Wildlife Park would consent to reducing our groupsize. We are committed to building the group up.

Kobenhaun:
Develop a plan for moving young birds of same 'cohort' around between zoos to form new pairs of a better genetic diversity. Males in exchange of males or females in exchange of females. Establish 1 or 2 centres for double clutching of eggs. By moving first clutch laid, to centres with incubation and hand-rearing experience. Second clutch to be incubated by the parents. It could be done with a price on each egg moved, for covering the expenses of the centre. This would never be cost as high as importing birds from the wild.

Kolmarden:
I have no ideas so far because Kolmarden didn't breed successfully so far. But I think the lights can be a big part of it. I will gratefully welcome more information from zoos who have breed successfully so far

Kristiansand:
I think it is a great idea and necessary for the management of the population. However, I do think a huge challenge will be that most institutions want to keep their flamingos, so it might prove difficult to increase the smaller groups to adequate breeding groups.

Marwell:
A very difficult task and even more difficult to implement.

Mechelen:
Very positive and good approach by the TAG. Full support from me. In the next TAG meeting discuss further strategy proposal.

New Church:
The range of questions has been comprehensive and really makes an institution think about it's long-term future with this species/group. It has also highlighted, to me anyway, some of the areas where we lack experience and more importantly the basic needs for this species. I have found the questions easy to understand and answer and wish all questionnaires were as easy to complete (it might be one of the reasons you had so many respondents!). It also helps, that as a small institution, we know that there is someone out there working towards the same goal and allows us to feel that we can make a useful contribution. Keep up the good work!

Obterre:
For information the size of our enclosure is 350 m2 (2/3 of water) with another terrestrial isolement enclosure of seventy m2. The steepness of water edge is very gradually and the water depth in between 0-100 cm. We have young flamingo this year in parent breeding (one on six eggs let to foster-parents)

Odense:
Excellent, good, brilliant, superb, about time, This is just the first step. It is not just how many individuals, maybe also winter quarters, pinioning or wing clip, breeding pools, nest material, dummy nests, at what time of the year do they get access to the breeding pool, feeding, artificial colouring. I am sure that's into our consideration.

Olomouc:
In the future we will plan exchange some birds with other zoos.

Peaugres:
We still have the same problem; when we catch the babies to put them a transponder, they are to small to have a ring. But after, when we try to catch an adult/subadult there is almost every time some accidents (broken legs), that is why our flamingos do not have rings, which is a problem to recognise them after (without catching them). Maybe other zoos have the same problem, so if somebody has an idea on how to do it to improve our management of flamingo (enclosure, how to put the ring and when, etc....), it would be great if this (these) persons) could tell us what to do! We would then try to improve our management, if possible.

Plaisance- Touch:
I would like to try to help them to construct some nests (if we have not to isolate them consecutively of the 'risk' of aviary influenza) at first time to observe their behaviour. After that add mirrors and enlarge our group if we have to do it.

Ramat-Gan:
We should try cooperating among our local (national) circles for ease of transport.

Rheine:
It is worth trying. Might be helpful to form a platform for direct contacts of potential 'egg-exchangers' or emergency-calls (chick hatching but no parents available: who wants to hand-rear….,)

Rhenen:
I think it will be good to have some protocols ready for actions planned in the whole process. I think off sexing, marking animals transporting, introduction etc etc. If animals are handled

the same way in procedures the might be less stressed. Maybe a translocation schedule to do a lot of exchanges in the same period. Or is this to much and do we leave it to the institutions.

Stuttgart:
I think it is a very reasonable and useful approach to give zoos some guidance and assistance during the process of building up single species colonies with a good age structure and a reasonable sex ratio. Practical day to day management based up on the husbandry guidelines, however, will be "homework" for institutions themselves.

Twycross:
with anything like this it's very difficult but it is a good initiative. It will be nice to know what other collections plans are but will they stick to them. It might be the case of a follow up survey each year as a progress report.

Veszprem:
I consider the flamingo transport a very important factor. I think we should develop regional breeding-centers, with large breeding groups for providing flamingos to other zoos in each region with short transporting way. So it would reduce the risk and the expense of many transports.

Wroclaw
The situation in our Zoo seems to be changing for better: the municipality promises us a new, adjacent terrain of ca. 10 ha. Therefore, we have changed our plans accordingly. In this new territory, we could construct entirely new enclosure. However, in this situation we would like to keep one species only, in number of ca 40 or more. The construction would take ca. 5 years. That is why we are in no hurry while acquiring new birds.
The idea is very good, providing that all interested zoos will really participate and will be willing to follow once established recommendations.

Wuppertal
I congratulate you to your efforts and for compiling such important research. However, as always with such recommendation both financial and practical reasons often prohibit such new recommendations to be put to work quickly.

WWT Martin Mere:
This is a great initiative. WWT is very willing to coordinate the implementation of the resulting management plan at a British level (e.g. through our chairmanship of BIAZA's JMSC waterfowl and flamingo tag)

WWT Slimbridge:
will move:
30 roseus to Pensthorpe waterfowl in December 2005, 30 roseus to in Safaripark Beekse Bergen, Holland in spring 2006, 10-15 chilensis to WWT Washington in December 2005, and 10 ruber to WWT Llanelli in December 2005.