

# Identification of Breeding Female Cranes by Their Clutches of Eggs

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**The eggs of breeding cranes are quite distinct and may differ considerably. Therefore it is possible to identify breeding females by their clutches of eggs.**

**In addition to band cranes and to use transmitters we believe, this method is another way to identify female cranes.**

**We present first results**

## **Aims of our investigations are:**

- 1. Allocation of second clutches to particular breeding females**
- 2. Proof of continued use of a breeding site or change to another breeding site**
- 3. Evaluation of the age of breeding females**
- 4. Proof of monogamous mating of a breeding female with a banded male**

## Photographing, measuring and weighing at the nests



**Important  
collaborators of the  
project**

Volker Mewes



Moriz Rauch

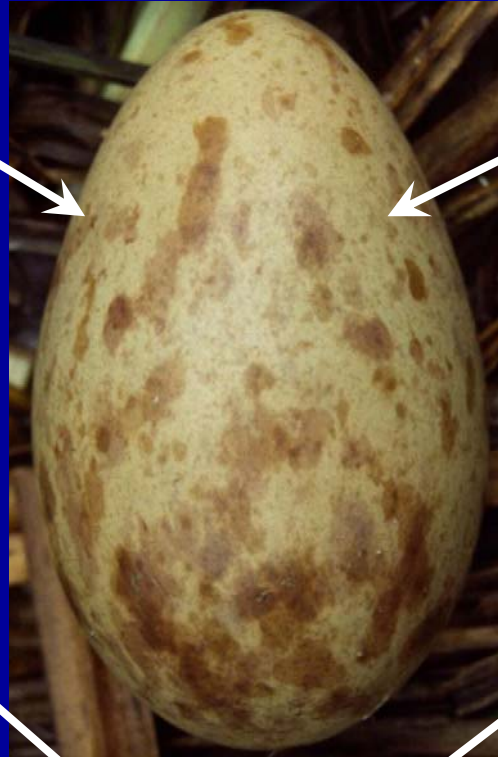
So we go to a nest and leave it in less than 15 minutes



# Crane egg

## hard facts:

- length
- diameter
- form of the egg
- (DNA)
  
- weight (density)\*



## soft facts:

- basic colour
- spots: distribution, form, colour, density, size
  
- glossiness \*
- lime-fog \*

**Typical for a crane female and  
base of the identification**

\* Is changing during incubation period

## Some examples of crane eggs

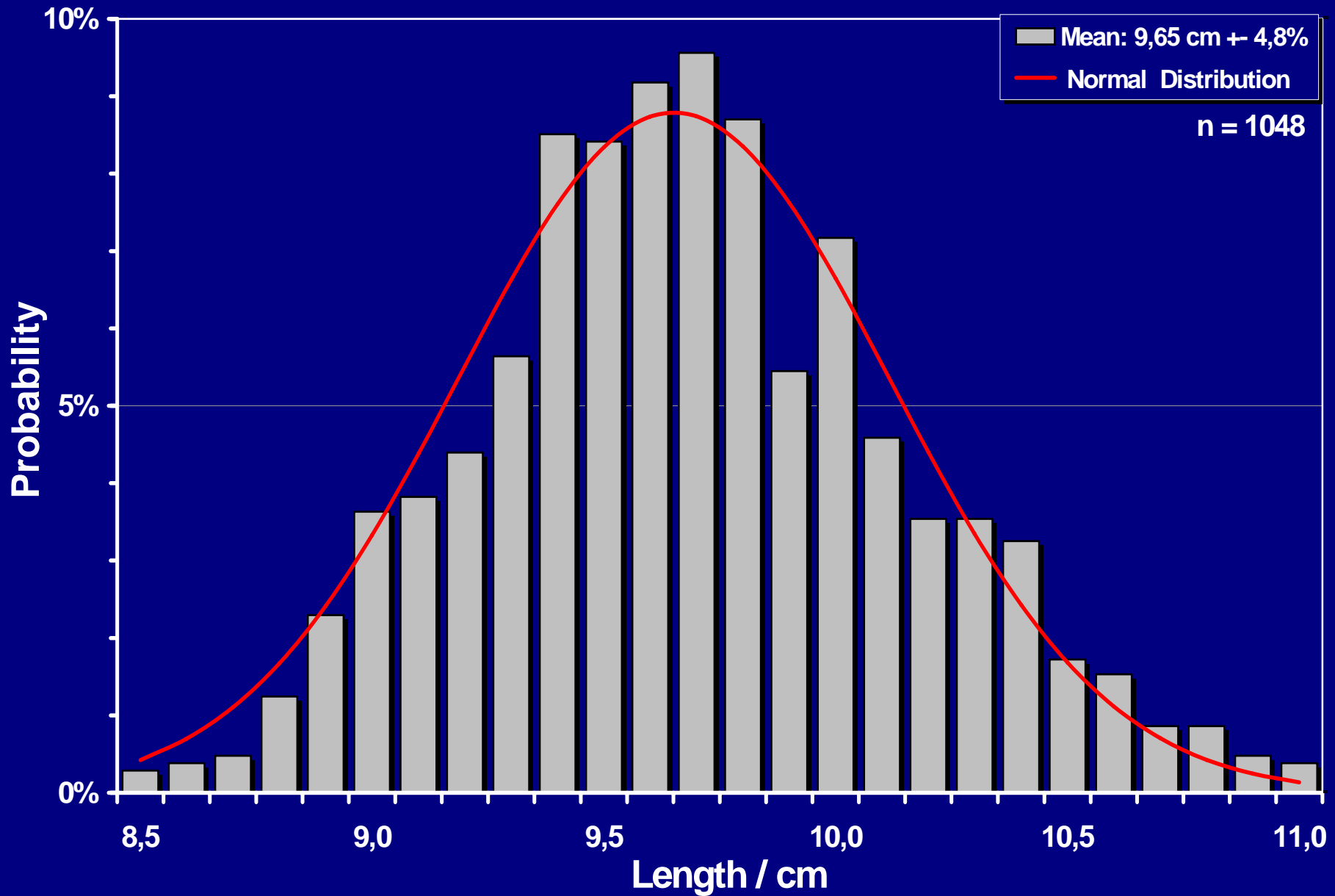




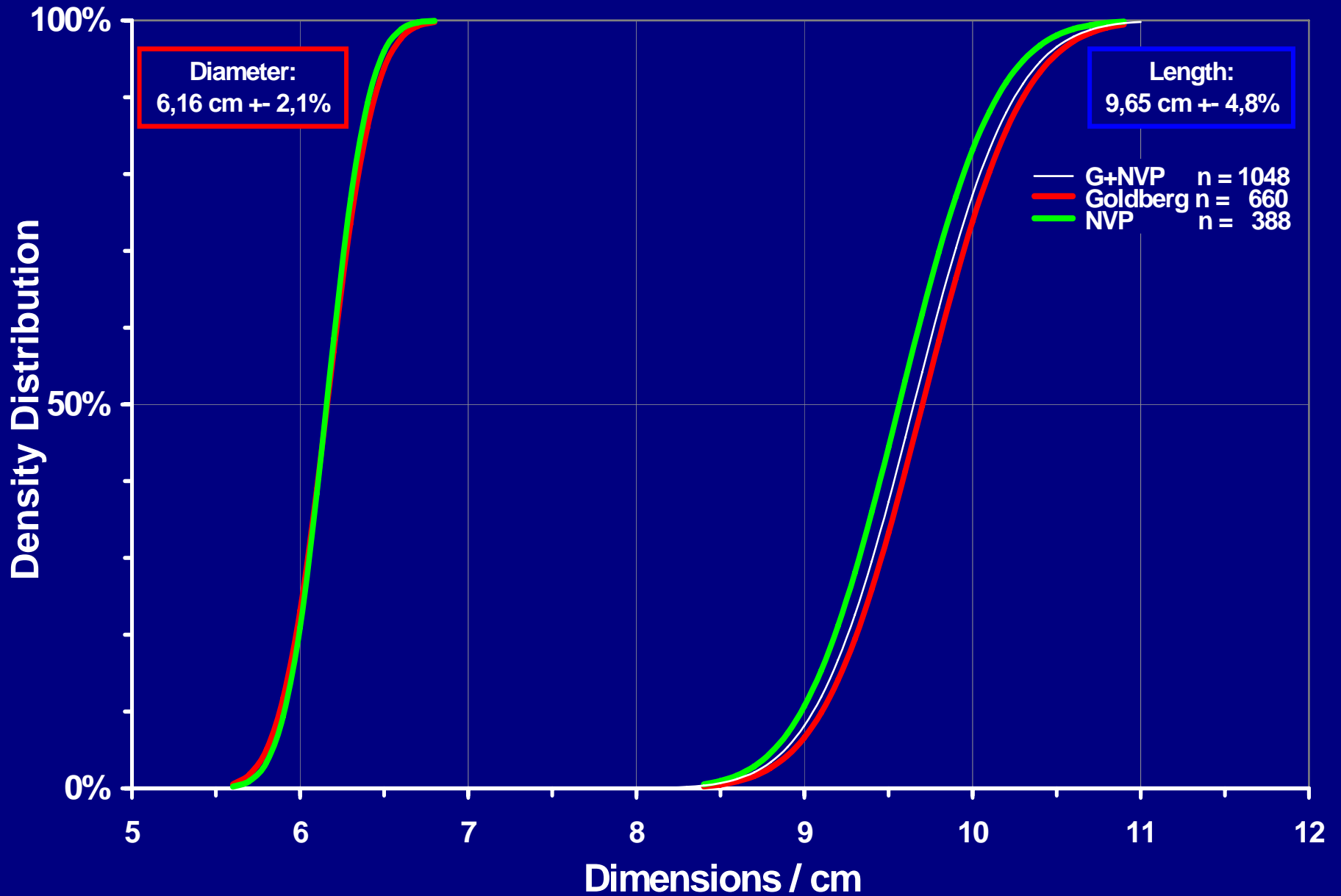
## Colour and spot density on the egg poles



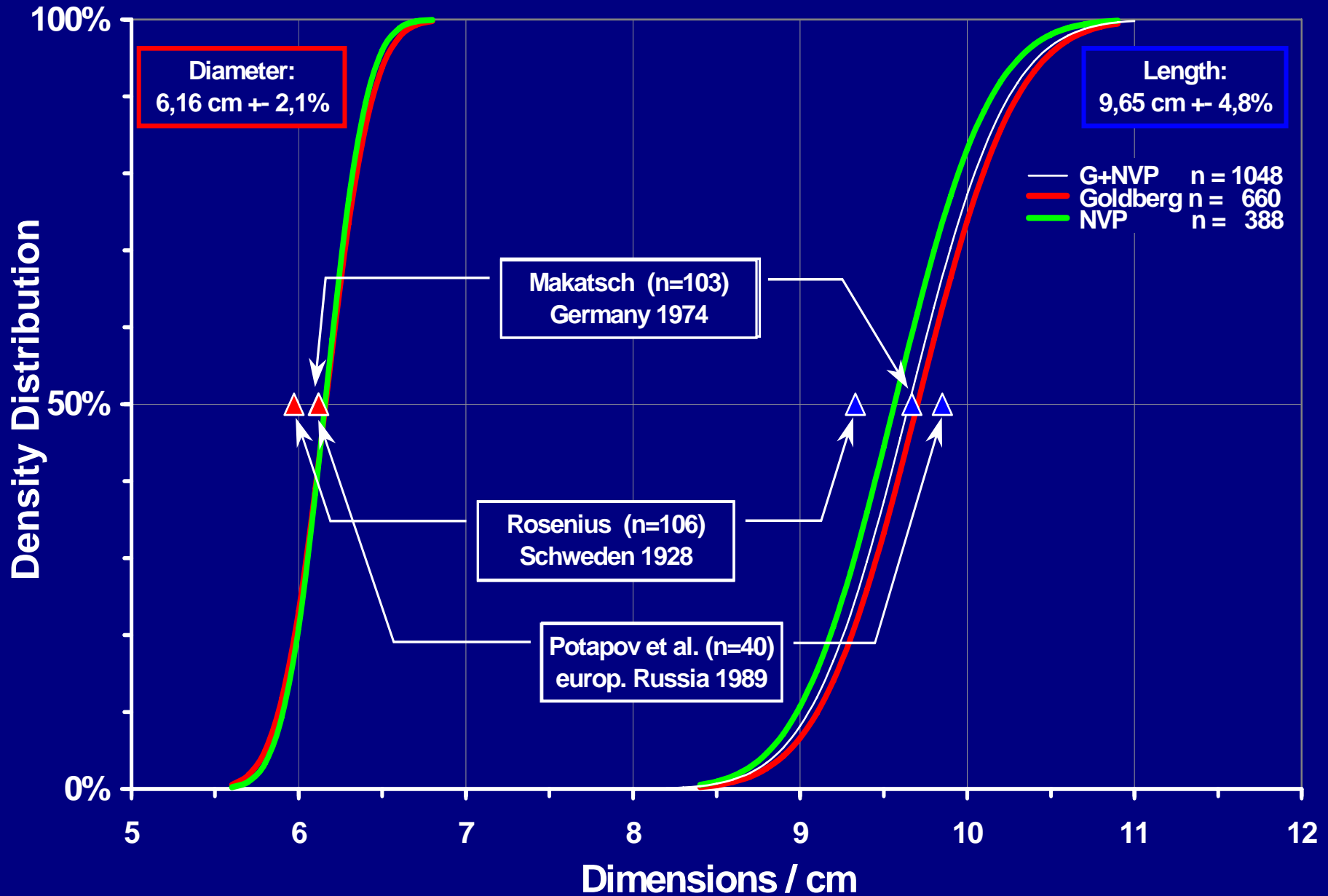
# Distribution of the length of crane eggs



# Distribution of diameter and length for crane eggs

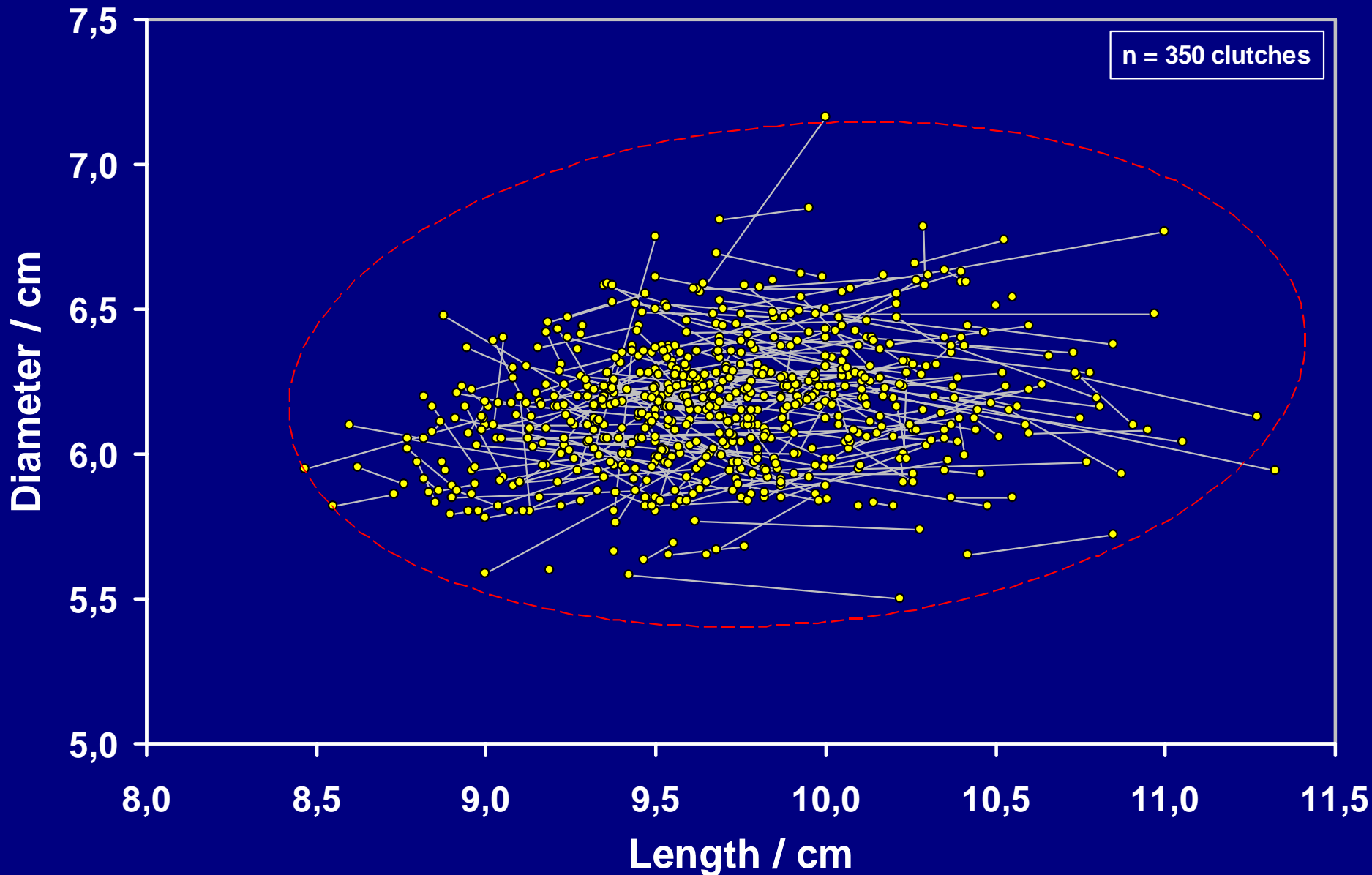


# Comparison with data reported in the literature



# Distribution of egg shapes

(eggs of one clutch of a specific year are connected by a line)



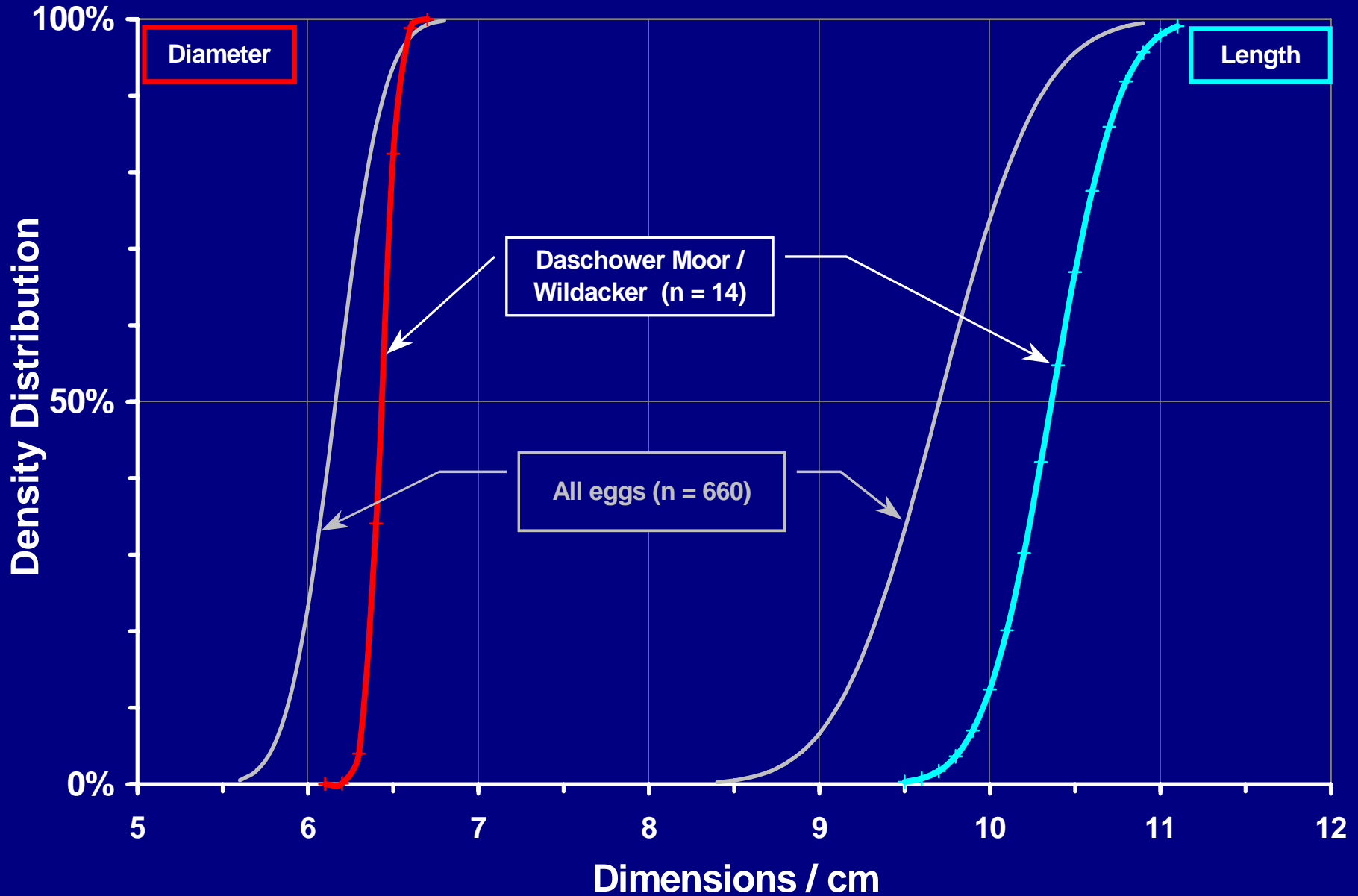
**Example for age and continued use of a breeding site:  
“Daschower Moor – Wildacker”**

**Proof of a breeding female since 1988 with 8 measured clutches (14 eggs)  
and 5 photos. The breeding female was banded in 1996 as an adult bird and  
was present until 2005. This female crane was at least 21 years old.**

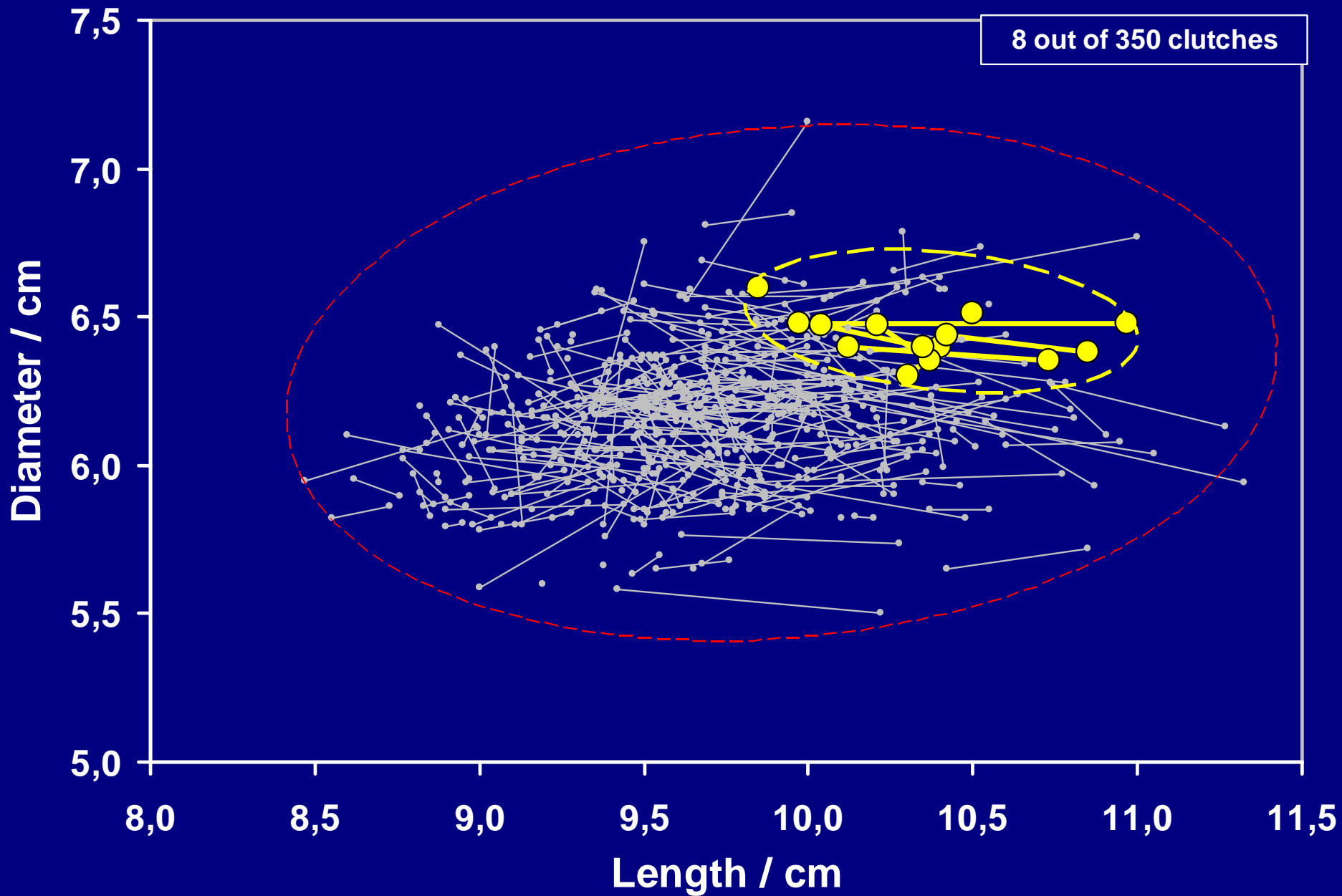


**The eggs are very long  
and thick (on average  
10,36 x 6,43 cm; n = 14)**

# Comparison of length and diameter of eggs of this female with all clutches



## Comparison of the form of her eggs with all clutches





## Example for age and changes of the breeding sites: “Karpfenteiche Karow”, ponds 2 and 3.

From 1989 until now is proved a breeding female with very long and slim eggs (at least 21 years old). From 2001 to 2005, there was a second breeding female which was banded in 1997 as a juvenile bird. In 2006, there settles a third breeding female.



Female 1  
2002

The eggs of female 1 are long and slim (mean: 10,35 x 6,16 cm; n = 24).

The eggs of female 2 are short and slim (mean: 9,19 x 6,04 cm; n = 5)

The eggs of female 3 are long and very thick (mean: 10,39 x 6,61 cm; n = 2)



Female 2  
2001



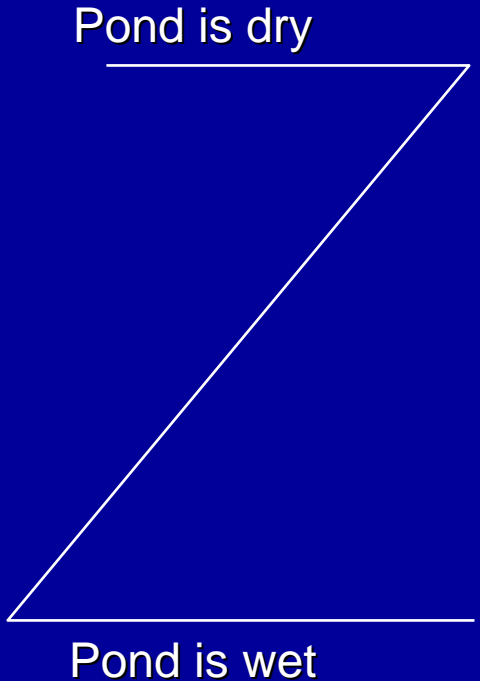
Female 3  
2006

# Changes of the breeding sites “Karpfenteiche Karow”

Pond 2 / Female #:

Year

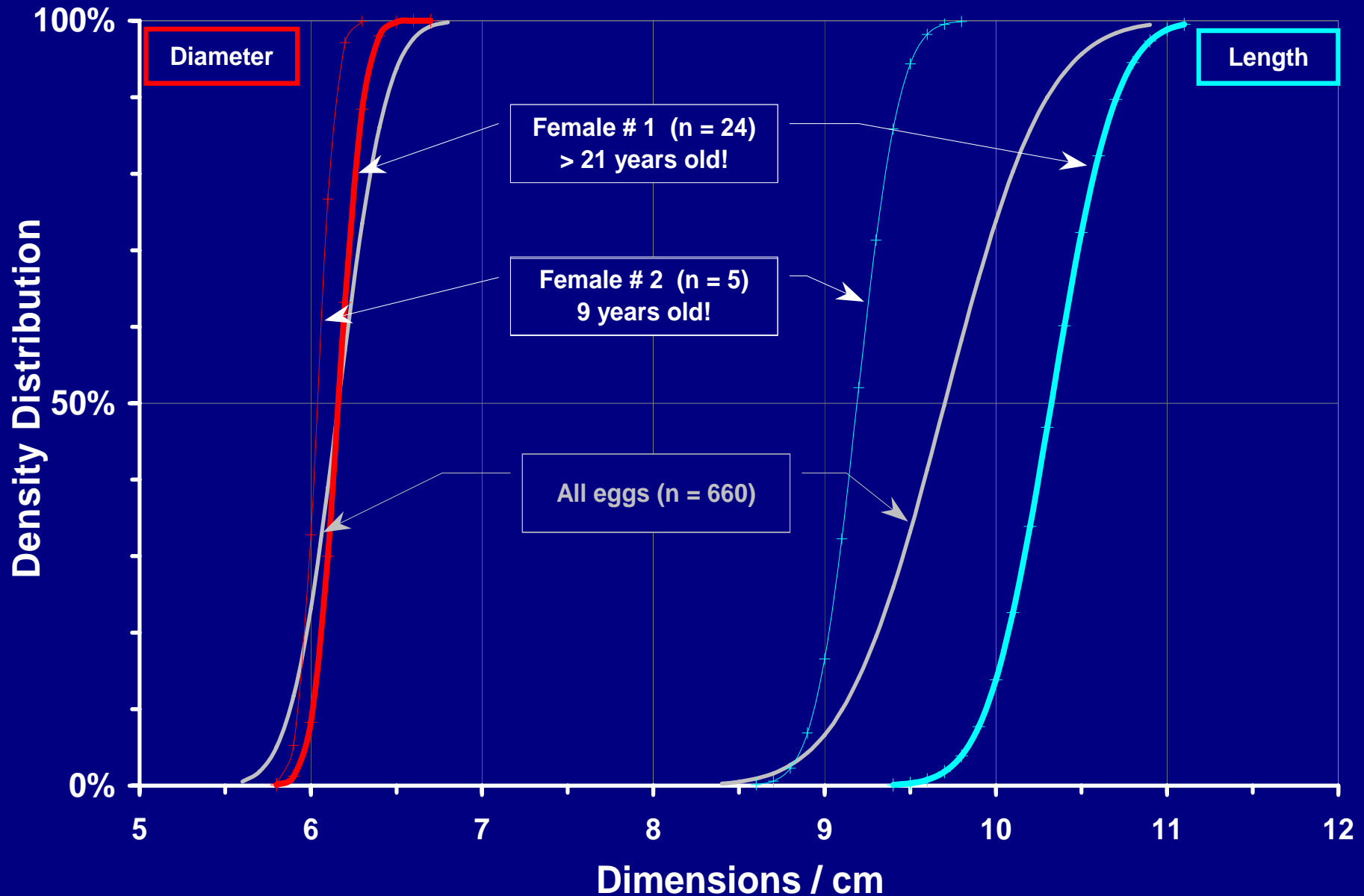
Pond 3 / Female #:



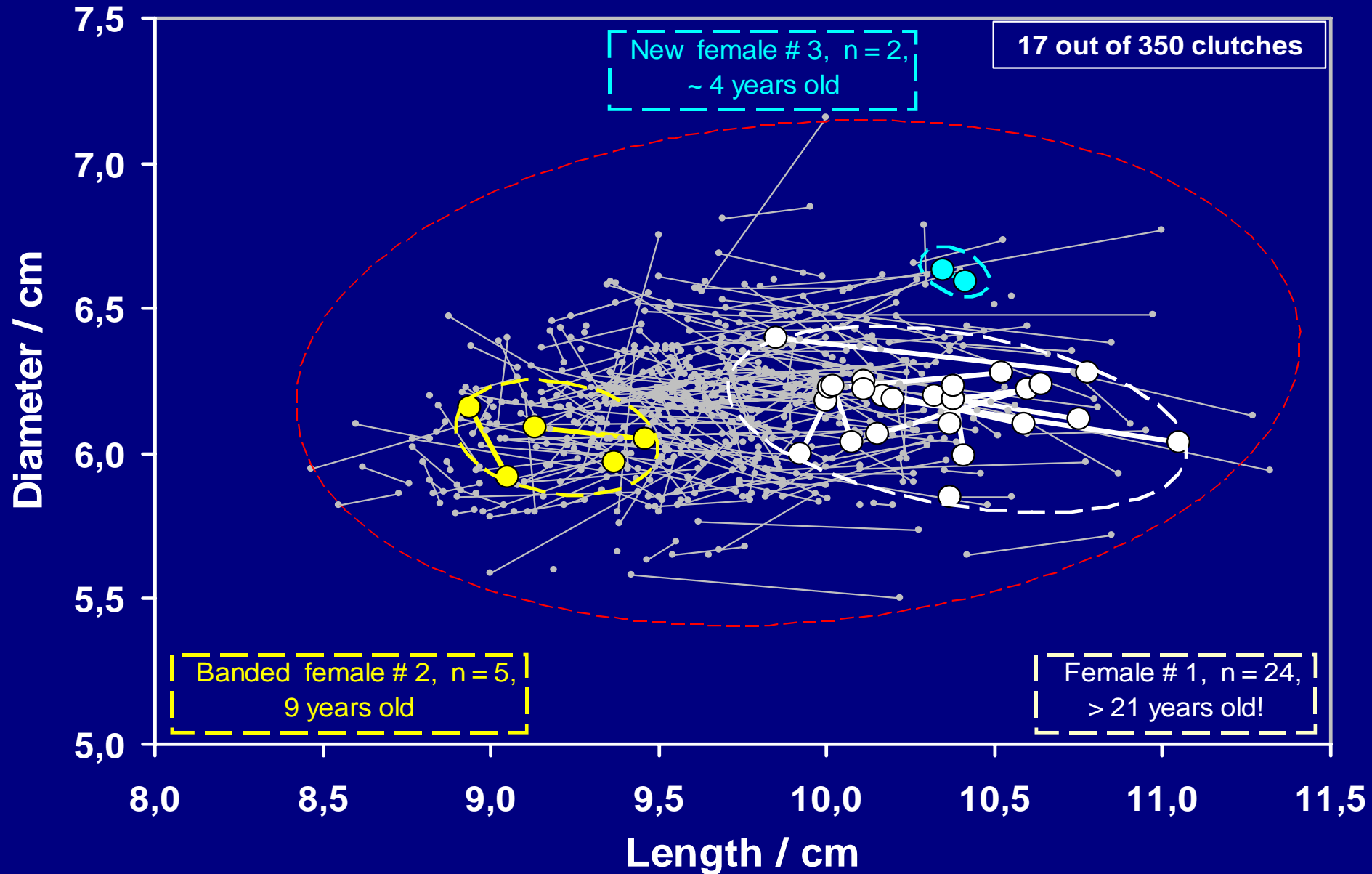
	1	.	
	1	.	
	1	.	
	1	.	
	1	.	
	1	.	
At least 21 years old!	1	.	

1988	.	? (not female #1!)
<b>1989</b>	.	<b>1 Eggs lost, second clutch</b>
<b>1990</b>	.	<b>1</b>
1991	.	1 ? Not checked
<b>1992</b>	.	<b>1</b>
<b>1993</b>	.	<b>1</b>
<b>1994</b>	.	<b>1</b>
<b>1995</b>	.	<b>1</b>
<b>1996</b>	.	<b>1</b>
<b>1997</b>	.	<b>1</b>
1998	.	1 ? Not checked
1999	.	1 ? Not checked
<b>2000</b>	.	- No BP present
<b>2001</b>	.	<b>2 BuWBu / RBuW</b>
<b>2002</b>	.	<b>2 BuWBu / RBuW</b>
<b>2003</b>	.	<b>2 BuWBu / RBuW</b>
<b>2004</b>	.	<b>2 breeding pair present</b>
<b>2005</b>	.	<b>2 breeding pair present</b>
<b>2006</b>	.	<b>3 A new female</b>

# Comparison of length and diameter from these females with all clutches



# Comparison of length and diameter of eggs of these females with all clutches



## Example of the age and changes of the breeding sites: “Granziner Wald / Acker”

The breeding female could be proved to settle at the site at least from 1989 to 2004. The eggs were long and slim and extremely coloured. Up until 2004, the female was breeding at four different sites, separated by distances up to 640 m.



1999 at  
place 3



2003 at  
place 4



2004 at place 4



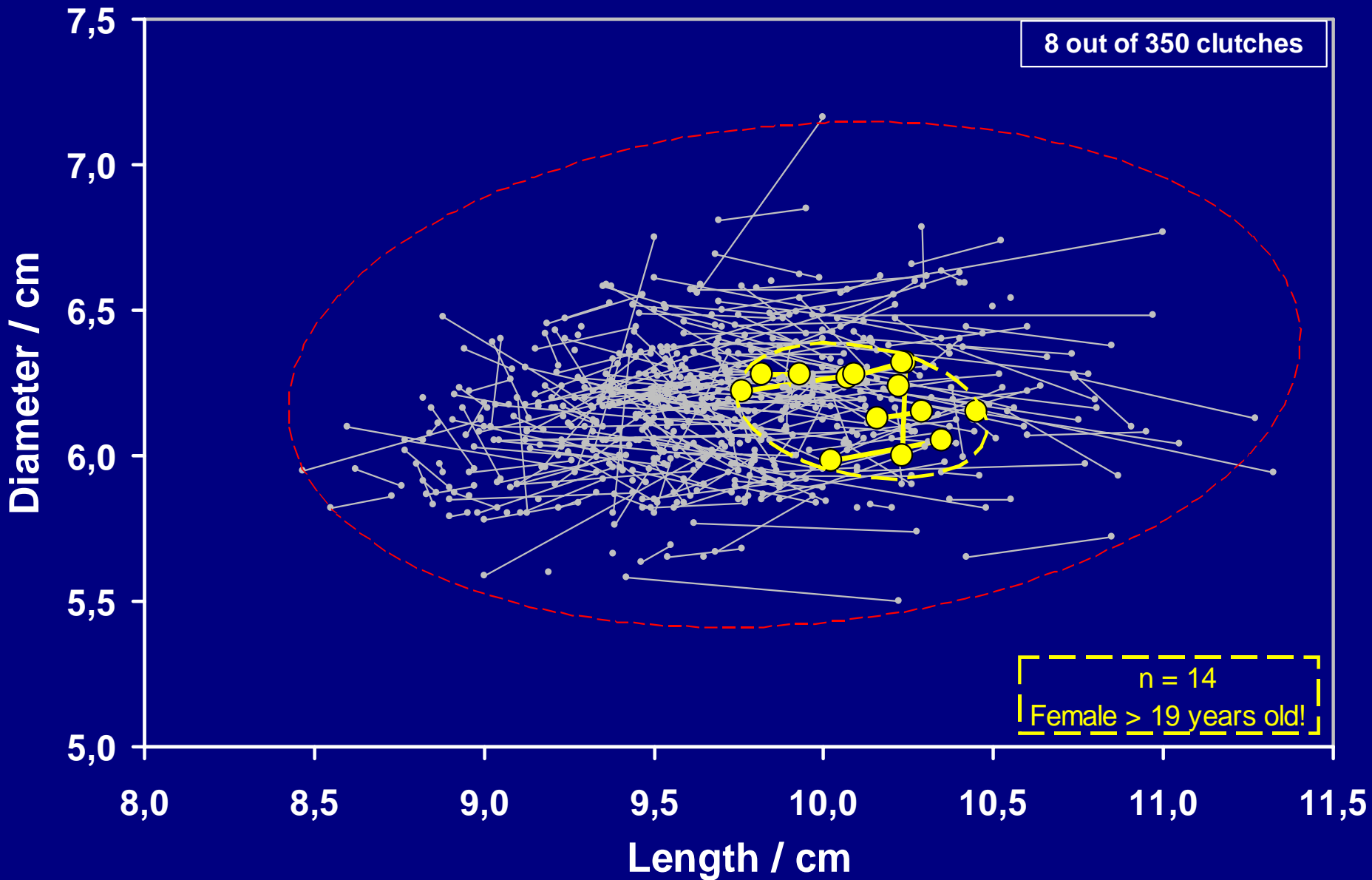
In 2004, the breeding female was at least 19 years old.

The eggs were on average 10,13 x 6,19 cm; n = 14

# Changes of the breeding sites of female „Granziner Wald/Acker“



# Comparison of length and diameter of eggs of the female: “Granziner Wald – Acker” with all clutches



## Example for changes the breeding sites: “Mühlenhof – Neu Benthen”

At least since 2001 this breeding female settles at isolated ponds in the field. In 2002 and 2006, it changed the breeding sites due to too deep water. The distances between breeding sites were 1080 m at a maximum. The female has long and pointed eggs.



Ackersoll  
Mühlenhof

2001



Grünlandsoll  
Muschwitz

2002



2005



2006

Torfstich  
Holzkaten

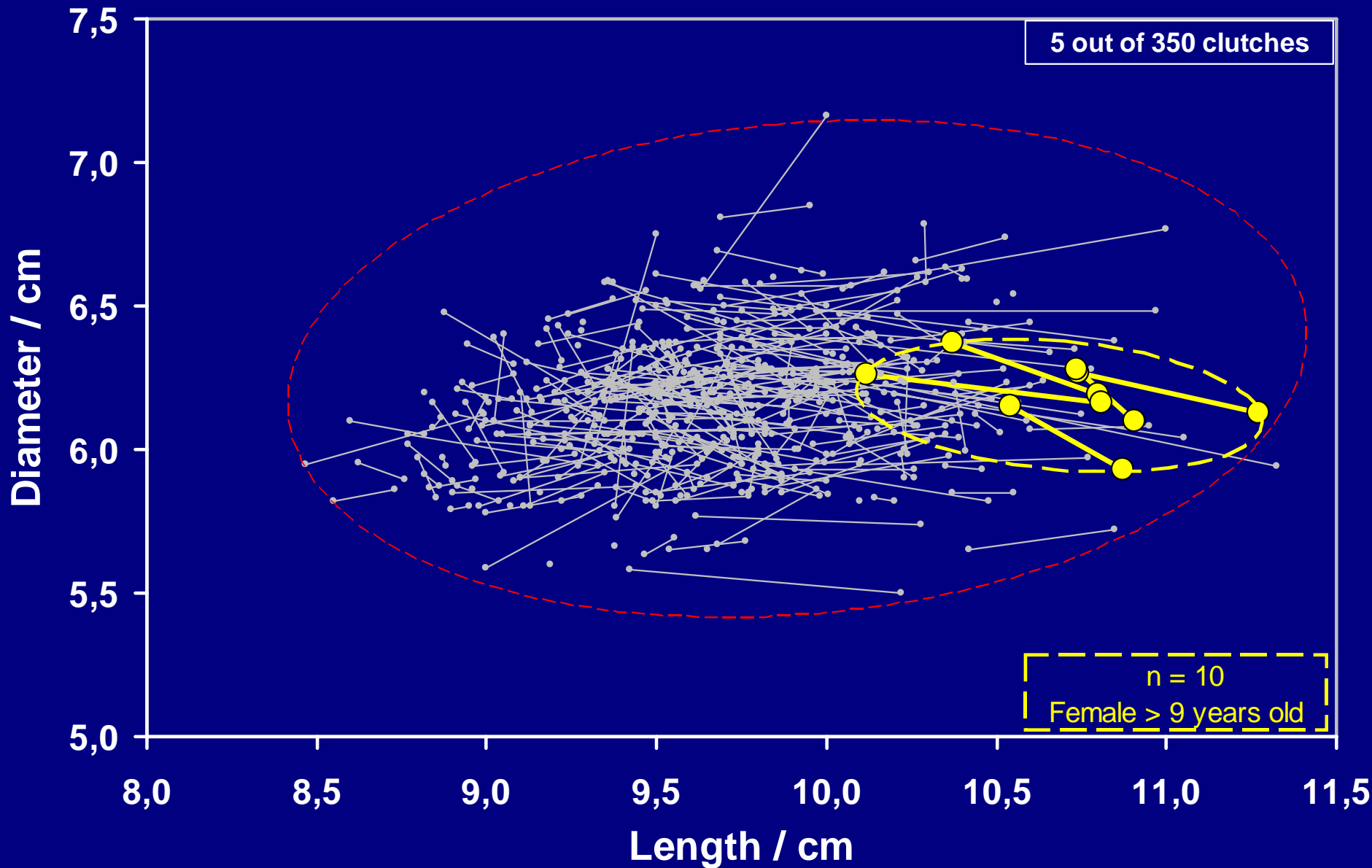
The eggs are on average 10,72 x 6,18 cm; n = 10



# Changes of the breeding sites of the female “Mühlenhof–Neu Benthen“



# Comparison of length and diameter of eggs of the female: "Mühlenhof – Neu Benthen" with all clutches



## Example for second clutches: Female "Mühlenholz - Wendehammer"

The breeding female with typical small and light-coloured eggs and with rings at the eggs poles had settled in the territory at least since 1990. In 2004, it produced two and in 2005 three clutches. We assume that it must be at least 20 years old.



Foul egg  
from the  
collec-  
tion



## Example for second clutches: Female “Mühlenholz - Wendehammer”

Remaining egg of the first clutch (15.4.2005)



The second clutch at another breeding site (23.4.2005)



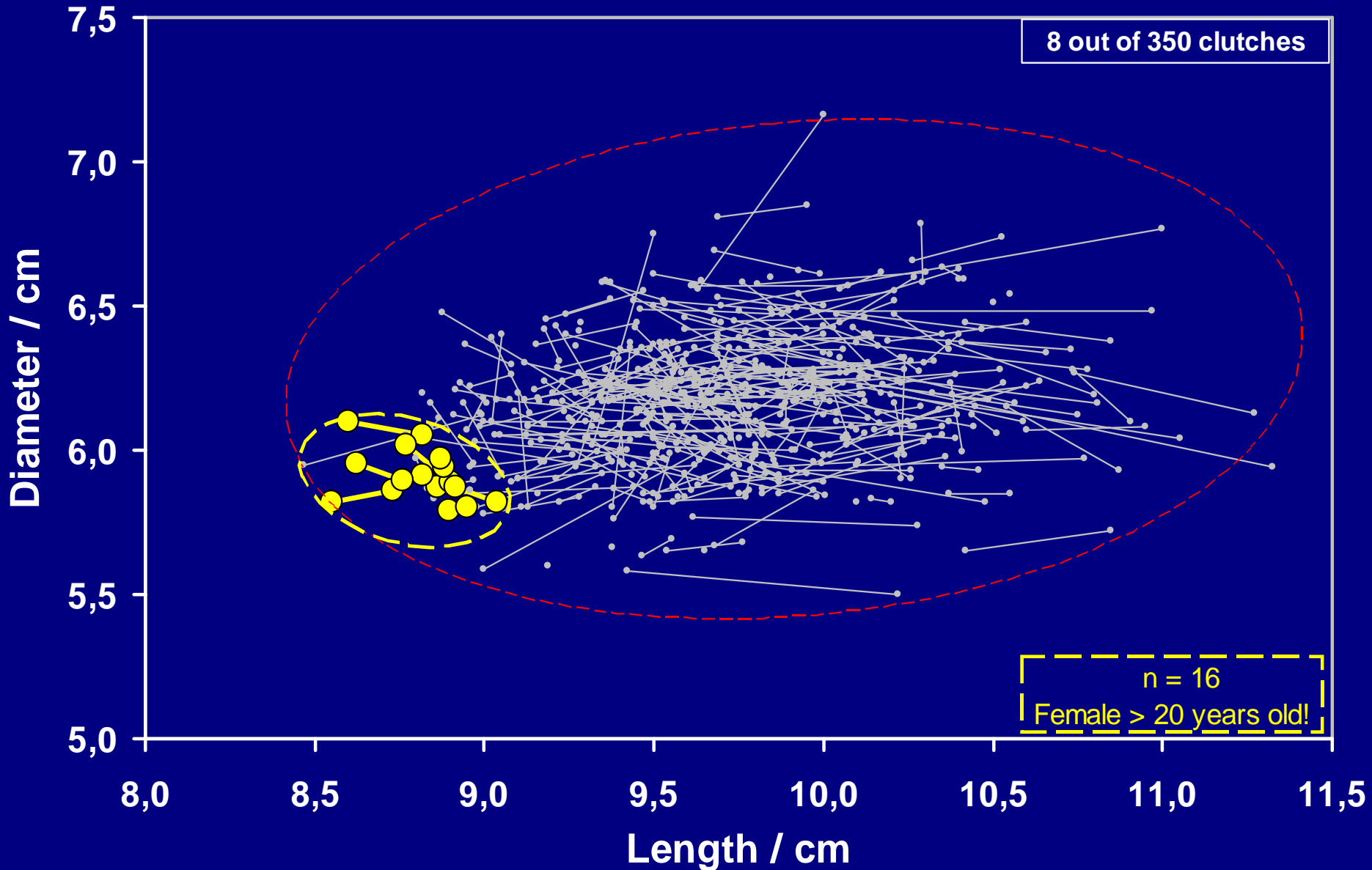
The third clutch at a third breeding site (13.5.2005)



The breeding female was identified by the clutches with typical colouring of the eggs, the small spots and the small size (8,81 x 5,90 cm; n = 16)

# Example for second clutches: Female “Mühlenholz – Wendehammer”

## Comparison of form of the eggs with all clutches



# Age of breeding female cranes in the Goldberg region as of 2006 (n = 59 at 46 places; start of reproduction assumed in the fourth calendar year)

## 1. Probably not living any more

2 x 7 years

1 x 14 years

3 x 8 years

2 x 15 years

1 x 9 years

1 x 16 years

1 x 11 years

1 x 18 years

1 x 12 years

1 x 19 years

1 x 13 years

1 x 21 years

mean value: 12,6 years

## 2. Probably still living

7 x 4 years

1 x 12 years

8 x 5 years

1 x 13 years

6 x 6 years

1 x 15 years

6 x 7 years

1 x 19 years

3 x 8 years

1 x 20 years

4 x 9 years

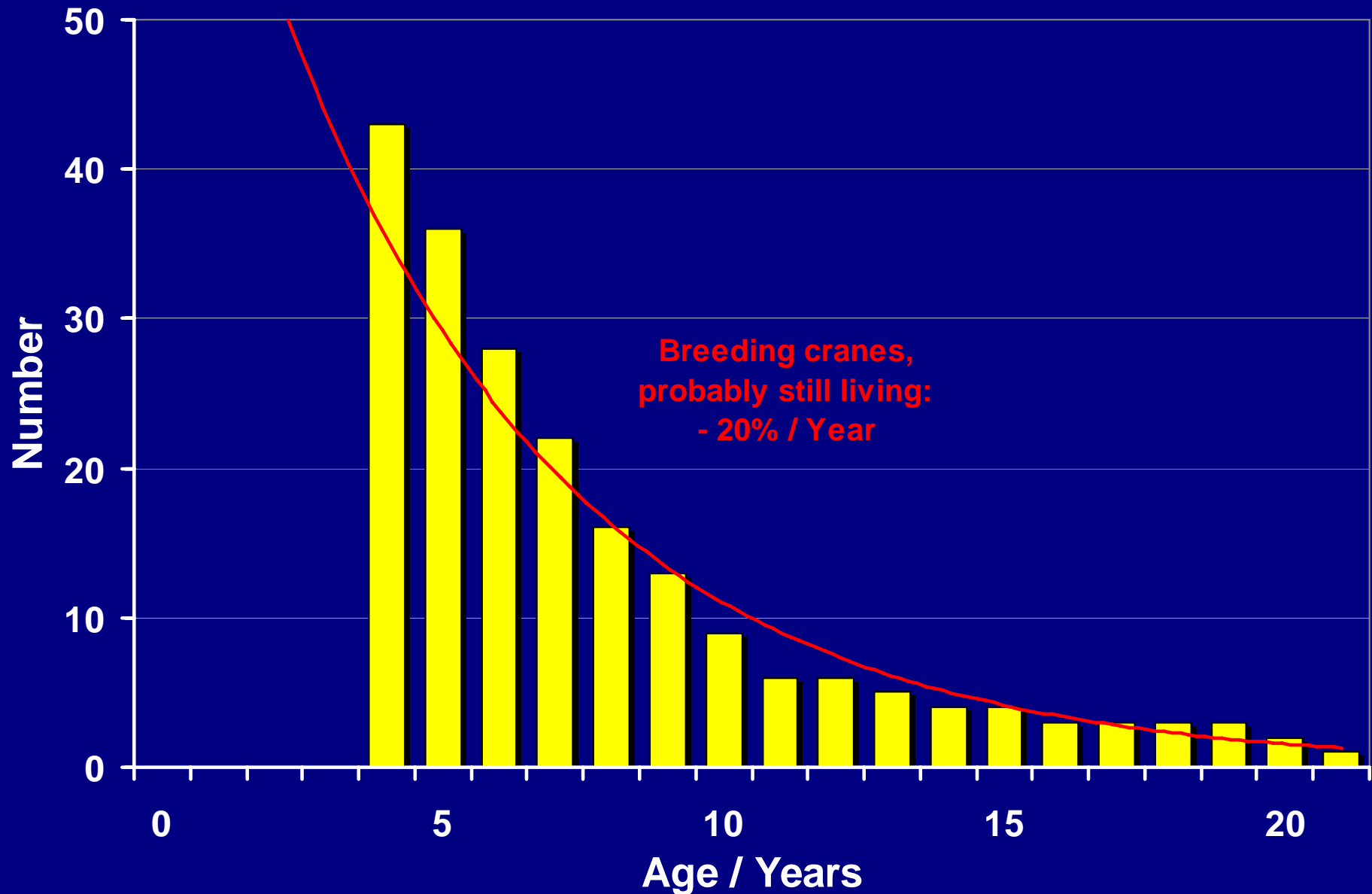
1 x 21 years

3 x 10 years

mean value: 7,8 years

# Age of breeding female cranes in the Goldberg region as of 2006

(n = 59 at 46 places; start of reproduction assumed in the fourth calendar year)



# Age of breeding female cranes in the Goldberg region as of 2006

(n = 59 at 46 places; start of reproduction assumed in the fourth calendar year)

