Litter Sizes and Breeding Seasons

of Hedgehogs in Germany

IGEL WISSEN kompakt

3

Litter Sizes and Breeding Seasons

of Hedgehogs in Germany

Monika Neumeier

Edited by Pro Igel e.V.

Litter Sizes and Breeding Seasons

of Hedgehogs in germany

3. Edition, Reissue

Bibliographic Information published by the Deutsche Nationalbibliothek
The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data is available in the Internet at http://dnb.dnb.de.

3. Edition, Reissue 2016

Cover Photography: Reinhard-Tierfoto, Heiligenkreuzsteinach
Editorial Management: Ulli Seewald, Münster/Westf.
Layout and Typesetting: Pamela Kröhl, Niestetal, Ulli Seewald, Münster/Westf.
Printed and bound in Germany by: Häuser KG, Köln
Cover Design: Pamela Kröhl, Niestetal

Photo Credits: R. Adam, Dortmund: 12 li, 26 re; A. Erdbeer, fotolia.com: 2 re; B. Hansen, Neumünster: 22 re; Th. Laakmann, Voerde: 24 (engl.) re; M. Partsch, Wemding: 12 (engl.) re; Th. Pilz, Mülsen: re; H. Randl, Salzburg: 20 li, 20 re; Th. Salein, Braunschweig: 22 li, 23 re; Superingo, fotolia.com: 28 li; Tierfoto-Reinhardt, Heiligenkreuzsteinach: 2 li, 14 li, 14 re, 29 re; L. Tomispin, fotolia.com: 28 re; A. Seebeck, Erlangen: 21 re; H. von der Mehden, Münster: 8 li; G. Zwanziger, Oberasbach: 13 re

ISBN 978-3-940377-16-6

Correspondence and inquiries to:
Pro Igel e.V. E-Mail: redaktion@pro-igel.de

Actual Informations in the Internet under www.pro-igel.de

Preface to the Reissue

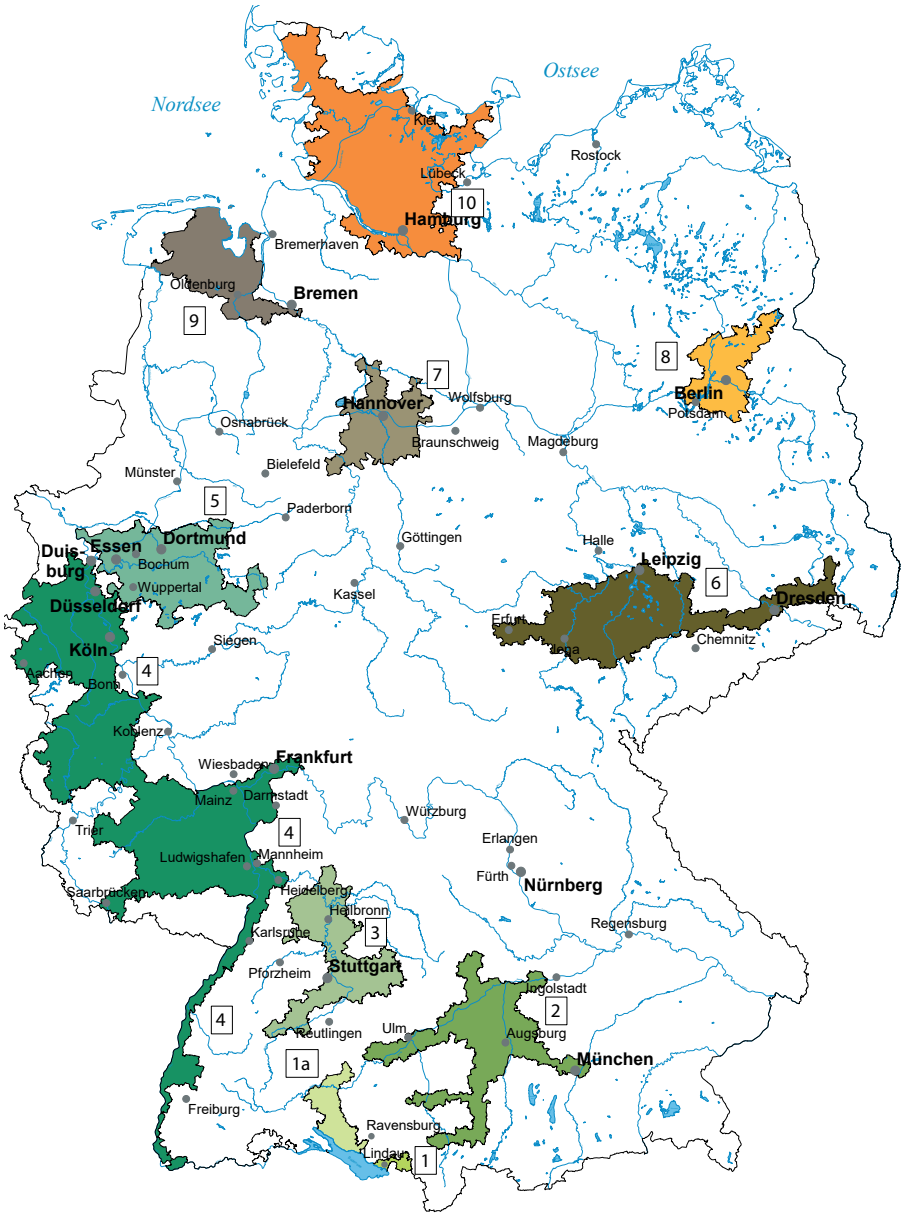
This book by Monika Neumeier is a milestone in knowledge about our native brown breasted hedgehog. The author has been an outstanding expert in the theory and practice of everything to do with hedgehogs *(Erinaceus europaeus Linnaeus 1758)* for more than four decades, has written numerous books and publications on hedgehogs and is the initiator and co founder of the Society Pro Igel e.V.

In this study, Monika Neumeier has swept away longstanding errors based on assumptions which academics and others still publish today about the reproduction, specifically the breeding season of the hedgehog in Germany : based on the analysis of a large collection of data on almost 2000 litters over many years, Neumeier proves that hedgehogs in Germany normally only produce one litter per year. The significance of this finding cannot be emphasised enough as it is important not only for correct biological knowledge about hedgehogs but is essential for meaningful and appropriate hedgehog care and for constructive endeavours in hedgehog and wildlife conservation.

All this is reason enough for the Society and Publisher Pro Igel e.V. to issue this groundbreaking study as the third volume in our series "HEDGEHOG KNOWLEDGE compact" - with thanks to our tireless author for her commitment to hedgehogs.

Münster, Westph., September 2016

Ulli Seewald, *President Pro Igel e.V.*



Designation of the eleven marked regions on the map:

1 Lake Constance/Westallgaeu	6 Erzgebirge/Thuringian Forest
1a Lake Constance/Oberschwaben	7 Hanover and surrounding area
2 Southern Bavaria	8 Berlin and surrounding area
3 Northern Baden-Wuerttemberg	9 Northern Lower Saxony
4 Rhine Plateau and surrounding area	10 Schleswig-Holstein/Hamburg
5 Ruhrgebiet/Bergisches Land	

Map created with EasyMap
© Lutum+Tappert, Bonn

Figure 2: *Geographical Map of Germany with the eleven areas under investigation*

3.2 Breeding Seasons

For the evaluation of the breeding season, 1817 questionnaires were available. The number of litters born each week in Germany is shown in percentage terms in *Diagram 3*. The first litter arrived in the last week of April, and the last two litters in the fourth week of October (darker green bars in *Diagram 3*). Excluding the litters in Region 4 – Rhine Plateau and surrounding areas – a completely different picture emerges: from the fourth week of May to the third week of June only a few hedgehogs are born, the actual breeding season for the rest of Germany only starts in the last week of July (lime green bars in Figure 3). In the month of August about 55% and in September about 30% of all hedgehogs are born in the whole of Germany. If one disregards Region 4, in the rest of Germany 59% of litters are born in August and 33% in September – a total of 92%.

Diagram 3: *Percentage count of all litters in Germany by week of birth (n = 1837) and percentage count of all litters excluding Region 4 - Rhine Plateau and surrounding area (n = 1649)*

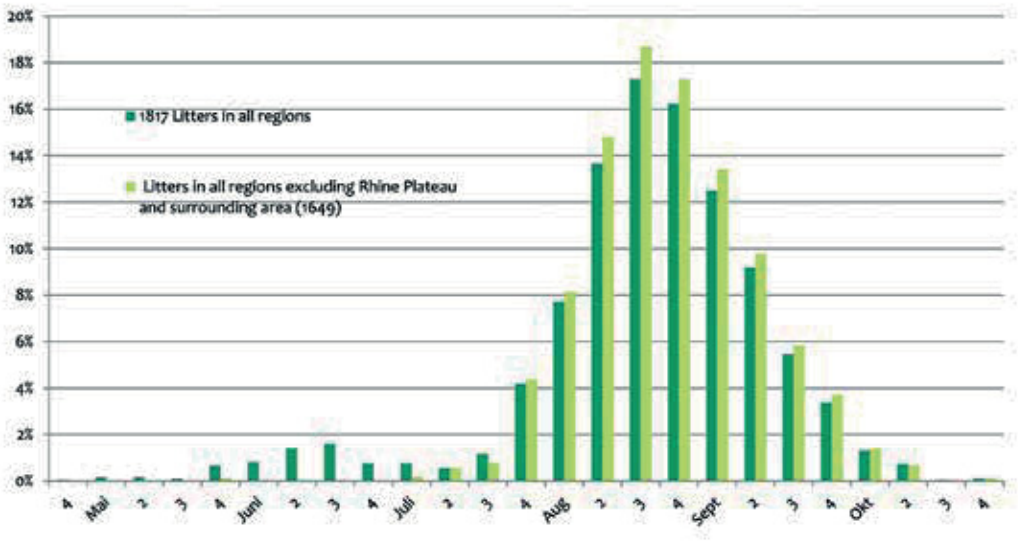


Table 6 shows the week of birth of each litter in the eleven selected regions on the map in *Figure 2* (*Page 17*). These regions incorporate a total of 1727 litter sites, a total of 95.05 % of all litters reported. The litters which could not be allocated to a particular region (4.95%), are listed as "Rest".

Table 4 shows the percentage distribution of litters in the months of April to October. All eleven regions are listed separately in *Table 6* and *Figure 2* (*Page 17*).

Below the breeding seasons in these regions will be investigated individually from South to North.

Table 6: *Percentages of litters in 11 regions of Germany from the 4th week of April to the 4th week of October**
The percentages for a region are dependent on the total number of litters within this area; the percentages of the total for all regions with the „Rest" (the litters not assigned to a specific region) relate to the total number of all 1817 litters

Region	No. of litters	Percentages of litters per week (4th week of April to 4th week of July)												
		4. A	1. M	2. M	3. M	4. M	1. J	2. J	3. J	4. J	1. J	2. J	3. J	4. J
1 – Lake Constance/Westallgaeu	80													2,5
1a – Lake Constance/Oberschwaben	75												1,33	12,0
2 – Southern Bavaria	113										1,77			8,85
3 – Northern Baden-Wuerttemberg	216							0,46					0,46	5,05
4 – Rhine Plateau + surrounding area	168	0,6	1,79	1,79	1,19	5,95	8,33	14,88	16,67	8,33	6,55	0,6	4,76	2,38
5 – Ruhr Region/Bergisches Land	259					0,39	0,39					0,39	0,39	4,63
6 – Erzgebirge/Thuringian Forest	56											1,79		5,36
7 – Hanover + surrounding area	73													8,22
8 – Berlin + surrounding area	312								0,32		0,32	1,6	0,64	0,96
9 – Northern Lower Saxony	46													
10 – Schleswig-Holstein/Hamburg	327											0,31	2,45	3,06
„Rest"/No specific area	90					1,11						1,11		6,67
Totals of Regions incl. „Rest"	1817	0,06	0,17	0,17	0,11	0,66	0,83	1,43	1,6	0,77	0,77	0,55	1,16	4,18

Region	No. of litters	Percentages of litters per week (1st week of August to 4th week of October)											
		1. A	2. A	3. A	4. A	1. S	2. S	3. S	4. S	1. O	2. O	3. O	4. O
1 – Lake Constance/Westallgaeu	80	7,5	22,5	12,5	23,75	20,0	8,75		2,5				
1a – Lake Constance/Oberschwaben	75	17,33	14,67	12,0	9,33	12	2,67	6,67	4,0	5,33	2,67		
2 – Southern Bavaria	113	14,16	25,66	18,58	15,04	7,08	6,19		0,88	1,77			
3 – Northern Baden-Wuerttemberg	216	4,13	19,27	22,94	21,56	11,93	9,63	2,75	1,38		0,46		
4 – Rhine Plateau + surrounding area	168	9,27	8,11	16,22	15,44	11,97	15,06	9,27	4,25	2,7	1,16	0,39	
5 – Ruhr Region/Bergisches Land	259	7,35	8,82	14,71	16,91	13,24	16,91	5,15	2,94	4,41	2,21		
6 – Erzgebirge/Thuringian Forest	56	5,36	21,43	14,29	28,57	1,79	8,93	5,36	3,57				3,57
7 – Hanover + surrounding area	73	8,22	20,55	31,51	12,33	9,59	6,85	2,74					
8 – Berlin + surrounding area	312	5,77	10,26	19,55	16,35	15,06	11,86	8,33	6,73	1,28	0,96		
9 – Northern Lower Saxony	46	6,52	6,52	36,96	19,57	10,87	13,04	4,35	2,17				
10 – Schleswig-Holstein/Hamburg	327	8,56	13,76	16,21	16,51	18,35	8,26	7,03	3,67	1,53	0,31		
„Rest"/No specific area	90	8,89	17,78	15,56	17,78	12,22	5,56	5,56	5,56	1,11	1,11		
Totals of Regions incl. „Rest"	1817	7,71	13,65	17,28	16,24	12,49	9,19	5,45	3,36	1,32	0,72	0,06	0,11

* * Week 1 = days 1. – 7.; Week 2 = days 8. – 15.; Week 3 = days 16. – 23.; Week 4 = days 24. – 30./31. of each month

Chapter 4

Conclusion

The examination of the eleven regions shows that only in one region – that of the Rhine Plateau and surrounding area which also incorporates a part of the Saarland – second litters, purely in terms of the time available are possible to a large extent. Whether or not they actually occur must be the subject of further study. The question also remains as to how much so-called replacement litters contribute to reproduction. It cannot be ruled out that some particularly late litters may indeed be these replacement litters. If the first litter dies during or shortly after birth, a female possibly has the opportunity to mate a second time and produce another litter. WALHOVD (1984) considers it unlikely that a mother would survive in the wild if her young die of some illness, he assumes that the illness or for example poisoning would be transmitted to the young. Whether this assumption is correct or not needs further research. There are other events which can kill an entire litter apart from illness, for example when a dog raids a nest, or if a nest is destroyed by gardening or construction work, the young – possibly injured – are scattered over a large area.

An argument against the probability of a larger number of replacement litters is also the fact that the female hedgehog is not ready to mate directly after giving birth, or during the first part of lactation (DEANESLEY 1934).

Table 4 shows clearly that the months of August (54.90 %) and September (30.50 %) are the main breeding months in Germany. If one disregards the litters from the Rhine Plateau and surrounding area, the percentage of litters in the rest of Germany increases to 58.90 % in August and to 32.70 % in September.

Chapter 5

Abstract

In several questionnaire distributions, primarily targeted at hedgehog rescue centres, a census was taken as to the size, estimated age, observation date and the observation site of litters of the Western European hedgehog (*Erinaceus europaeus* Linnaeus 1758). 1437 questionnaires were analysed regarding litter size, and 1,817 questionnaires regarding breeding season, spanning the period 1983 to 2005.

On average, a litter contained 4.43 young. In litters of up to one week of age, the average number of young was 4. 76; at an age of one to three weeks, the average was 4.41 young, and at an age of three to five weeks, an average litter size of 4.24 hedgehogs was determined.

1817 observations were used to determine the length of the breeding season. Considerable differences were noted as to the start and length of the breeding season of the hedgehog in Germany, according to location and climate of the observation site. To clarify these differences, the breeding season in eleven different regions of the Federal Republic were more closely examined, in each of which between 46 and 327 observations had been recorded. Litters of young hedgehogs were seen or more specifically taken into care by hedgehog rehabilitators and rescue centres between the first week of May and the last week of November. The respective dates of birth were calculated from the dates of the observations and other criteria which were set out in the questionnaire.

Overall the main breeding season in the regions of Germany which were studied occurred in the months of August with 55% of births and September with 31% of births. However, on the Rhine Plateau and some surrounding areas around 60% of hoglets were born before the end of June. If one disregards Region 4 (Rhine Plateau and surrounding area) in determining the breeding season in Germany, in the remaining areas 59% of births occurred in August and 33% in September – a total of 92%.

Only in Region 4 (Rhine Plateau and surrounding area) would there be time for a second litter. However, even in this region there several reasons why a second litter may not be possible.

KEYWORDS:
hedgehog, *Erinaceus europaeus,* litter size, breeding season, reproduction, Germany, second litter