

Twenty years of seal pathology (1970-1990)

J. S. van der Kamp

Seal Rehabilitation and Research Center Hoofdstraat 94a, 9968 AG Pieterburen, The Netherlands

Abstract

Taking care of seals is a matter of life and death. Work has been done with accuracy and enthusiasm during the past twenty years at the Seal Rehabilitation and Research Center. The number of necropsies and findings over the past twenty years are discussed and summarized.

Introduction

In 1970 Lenie 't Hart started to take care of orphaned seals in Pieterburen Holland under very primitive conditions. This care then extended to adult seals. In 1979 a new rehabilitation centre was built followed by extensions in 1987 and 1992 to accommodate more seals and human visitors desiring to observe the care given to seals. The centre now hosts nearly 200,000 visitors annually.

Despite the excellent care provided by the centre seals die. Causes of death are best determined by necropsy and examination of the pathology leading to death. The first seal necropsy from the center was conducted in 1972 at the Regional Animal Health Service Centre in Groningen. Many of these original examinations were conducted by Dr. J. van Haften at the Research Institute for Nature Management in Arnheim and Texel Holland. In 1989 an agreement was made between the Research Institute for Nature Management, the Netherlands National Museum of Natural history in Leiden and the Seal Rehabilitation and Research Centre to

Table 2. The number of seal deaths from 1972 to 1991

Year	Number
1972-1977	24
1977-1982	73
1982-1987	308
1987-1991	474
Total	879

co-operate and to necropsy all cetaceans that strand on the Wadden Islands and the shores of the Dutch provinces of Friesland and Groningen. During the last few years most of these necropsies have been completed at the Seal Rehabilitation and Research Centre. This paper summarizes the results of this effort.

Results and Summary

Reports of necropsy results really started in the 1960s. A summary of the number of necropsies conducted at the Regional Animal Health Service Centre in Groningen and later on in Drachten from 1960 to 1981 is provided in Table 1. As may be seen by examination of that table, the number of reported examinations during the first five years is relatively small. One reason for this scant number may be that few people in the general public knew what to do when they came across a dead seal. The

Table 1. Seal deaths by species and five year block from 1960 to 1981

Year	Number	<i>Phoca vitulina</i>		<i>Halichoerus grypus</i>	<i>Phoca hispida</i>
		young	adult		
1960-1966	31	19	12	—	—
1966-1971	48	26	21	1	—
1971-1976	205	130	65	10	—
1976-1981	216	100	90	23	3
Total	500	275	188	34	3

Table 3. The total number of dead seals that either died in the Centre or were found dead on the shores between 1985 and 1990 (1988 not included).

Year	Number	<i>Phoca vitulina</i>				<i>Halichoerus grypus</i>				Other				Total	
		young		adult		young		adult		young		adult		A	B
		A	B	A	B	A	B	A	B	A	B				
1985	61	4	20	15	19	—	1	—	2	—	—	—	—	19	42
1986	66	4	21	18	18	—	—	1	2	—	1	—	1	23	43
1987	74	13	15	10	26	—	—	2	—	—	—	3	5	28	46
1989	48	6	14	3	19	1	2	1	1	1	—	—	—	12	36
1990	25	1	9	—	7	1	1	—	2	—	2	1	1	3	22
Total	274	28	79	46	89	2	4	4	7	1	3	4	7	85	189

A=taken up, but died

B=found dead

actual hunting of seals was not outlawed until 1962. After that time the seal population presumably recovered and increased but then declined to near 500 near the end of the 1960s. With the decline in population, and the increased public interest in seals, the number of postmortem examinations increased.

The increased interest and postmortem examination levels during the 1970s and 1980s is demonstrated by the data provided in Table 2. The increased numbers as compared to those of Table 1 may be partially explained by the fact that during the 1970s postmortem examinations were only conducted on seals from the Seal Rehabilitation and Research Center, following that time postmortem exams were also conducted on seals found dead on the shores. The difference between the second five years and the third is most likely due to increased publicity from the Seal Rehabilitation and Research Centre. Despite increased care and better therapy, another large increase in the number of necropsies occurred at the end of the 1980s. This can be explained by the enormous mass mortality in 1988 caused by the phocine distemper virus 1 infection.

Data from the years 1985 to 1990 are provided in Table 3, subdivided into harbour seals (*Phoca vitulina*), grey seals (*Halichoerus grypus*), and others including harp seals (*Phoca groenlandica*), ringed seals (*Phoca hispida*), Mediterranean monk seals (*Monachus monachus*), and hooded seals (*Christophora cristata*) that have been taken up in the Seal Rehabilitation and Research Centre (seen in column A) or were found dead on the shores (seen in column B).

The Seal Rehabilitation and Research Centre at Pieterburen has been a very active place over the past twenty years. Table 4 summarizes the total number of seals taken in and released, along with the number of deaths during that time. Data on

animals entering the Centre more than one time are not available. The year 1988 is not included because of the very high number of deaths and few releases due to the phocine distemper virus.

Results of Postmortem Examinations

Seals die of many causes. The results of our post-mortem examinations in terms of cause of death are provided in Table 5. In order to avoid details

Table 4. Total number of seals taken in at the Centre along with subsequent outcomes of death or release from 1971 to 1990 (data from 1988 not included).

Year	Taken in	Died	Released
1971	1	—	1
1972	11	7	4
1973	15	5	10
1974	13	5	8
1975	17	5	12
1976	22	2	20
1977	18	10	8
1978	44	15	29
1979	40	10	30
1980	46	18	28
1981	53	20	33
1982	53	14	39
1983	67	20	47
1984	56	17	39
1985	72	19	53
1986	75	23	52
1987	104	28	76
1989	57	12	45
1990	48	3	45
Total	812	233	579

Table 5. Causes of seal deaths.

	1972-1977	1977-1982	1982-1987	1987-1991	Total
Cachexia	1	5	39	24	69
Bronchopneumonia	4	26	68	20	118
Heart defect	1	4	8	1	14
Gastroenteritis	4	4	11	4	23
Peritonitis	1	7	11	3	22
Hernia diaphragmatica	—	2	2	3	7
Meningitis	—	2	1	1	4
Trauma	4	—	4	1	9
Stillborn	—	—	8	7	15
Drowned	—	2	24	16	42
Autolysis	—	—	54	36	90
Other	4	11	33	20	68
No diagnosis	5	10	37	7	59
Total	24	73	300	143	540

Table 6. Causes of seal deaths at the Centre.

	1972-1977	1977-1982	1982-1987	1987-1991	Total
Cachexia	1	5	4	7	17
Bronchopneumonia	4	26	32	9	71
Herpes virus infection	—	—	11	—	11
Heart defect	1	4	3	2	10
Gastroenteritis	4	4	3	2	13
Cl. perfringens infection	—	—	3	4	7
Peritonitis/pleuritis	1	7	4	1	13
Hernia diaphragmatica	—	2	—	2	4
Meningitis	—	2	1	1	4
Trauma	4	—	1	1	6
Other	4	13	16	11	44
No diagnosis	5	10	15	4	34
Total	24	73	93	44	234

only those causes occurring more than 5 times are entered into the table. Once again the findings from 1988 are suppressed. There were 327 necropsies performed in 1988 and not all of the findings are noted. Most of the seals clearly died as a result of the phocine distemper virus infection during 1988.

The data from Table 5 showed causes of death of all seals on which necropsies were performed. In contrast, the data from Table 6 are from those seals that actually died in the Seal Rehabilitation and Research Centre following admission. Some died after a few hours and others after much longer periods of time.

Discussion

The Centre at Pieterburen has provided fine care for sick and orphaned seals. As may be seen in Tables 5 and 6 cachexia is an important cause of death in young orphaned seals. Many of the young seals are

now saved by administering rehydration salts and, if necessary, antibiotics and intensive care. These relatively simple procedures have strongly diminished the mortality rates. Bronchopneumonia, another important cause of seal death, is usually accompanied by lungworms like *Otostrongylus circumlitus* and *Parafilaroides gymnuris*, now and then in combination with bacteria like *Pasteurellae* or *Streptococci*. These afflictions also decreased as causes of death when animals are cared for at the Centre thanks to an improved therapy with anti-parasitics combined with a variety of antibiotics. Death by drowning must also be mentioned as important. Improved fish traps that include a turn-net could help to solve this problem.

There are less prominent causes of death including individual cases of meningitis, but the Herpes virus infection of 1984 is certainly worth noting. This herpes virus was isolated by Dr. A. Oosterhaus of the Dutch Institute of Public Health and

Environmental Hygiene in Bilthoven who also discovered the phocine distemper virus 1 in 1988 that caused the deaths of nearly 16 000 seals throughout Europe. The Waddensea population has been estimated to have diminished to approxi-

mately 400 animals, but it appears now as though it may recover. Hopefully the reduced numbers of animals that died in 1989 and 1990 at the Seal Rehabilitation and Research Centre will indicate a trend of reduced future deaths.