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Note on the occurrence of *Spondylitis deformans* in a sample of harbour porpoises (*Phocoena phocoena* (L.)) taken in Danish waters

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Spondolytis deformans, a pathological deformation of the vertebral column, has so far been found in 41 cases in 26 recent and extinct cetacean species, among them the harbour porpoise (*Phocoena phocoena* (L.)) (Slijper 1936, van Bree & Duguy 1970 and Paterson 1983). This paper adds another six cases for the harbour porpoise.

For a study on the health status of the Danish harbour porpoises between August 1980 and February 1981 148 specimens (78 males and 70 females) were collected primarily in the Danish industrial fishery (Andersen & Clausen 1983). After biological and veterinary examinations the skeletons of these animals were kindly handed over to the Zoological Museum and examined by the author.

Of the 148 specimens collected three females and three males showed various stages of spondylitis deformans (Table 1). Additional data is available for five of the specimens infected (Table 2). All three females were old animals (11 and 12 years by growth layers in the dentine, and estimated from the degree of vertebral epihyseal closure) while the three male specimens were much younger (0, 3 and 4 years respectively).

Female 1 showed light spondylitis deformans in the 7th and 8th lumbar vertebrae (Table 1). Female 2 had light spondylitis deformans at two sites (8th and 9th lumbar vertebrae and first caudal vertebra, Table 1). Female 3 showed the most heavy infection of all six specimens with heavy spondylitis in the 2nd to 4th caudal vertebrae, and light spondylitis deformans at two sites (6th and 7th lumbar vertebrae and 10th and 11th lumbar vertebrae, respectively) (Figure 1). All male specimens had spondylitis deformans with low severity in different caudal vertebrae (1st and 2nd caudal vertebrae, 6th and 7th caudal vertebrae, and 11th and 12th caudal vertebrae, respectively).

Paterson (1983) suggested the disease to be found primarily in old individuals. The present findings only partly support this option. The two aged females were close to the maximum life expectation of the harbour porpoise, which is meant to be 13 years (Gaskin & Blair 1977). However, all male

Table 1. Sites of occurrence of spondylitis deformans.

Specimen	Lumbar vertebrae	Caudal vertebrae
Female 1		
ZMC CN 179	7 & 8	
Female 2		
ZMC CN 96	8 & 9	1
Female 3		
ZMC CN 237	6 & 7, 10 & 11	2,3,4
Male 1		
ZMC CN 165		1 & 2
Male 2		
ZMC CN 158		6 & 7
Male 3		
ZMC CN 170		11 & 12
Slijper female		
RMNH 31225	12 & 13	

ZMC CN = Zoological Museum of Copenhagen Catalogue number.
RMNH = Rijksmuseum van Natuurlijke Historie.

Table 2. Additional data on the six harbour porpoises of the present study and the female specimen quoted by Slijper (1936).

Specimen	Length	Eight	Age	Location
Female 1				
ZMC CN 179	164 cm	56 kg	12 yrs	Northern North Sea
Female 2				
ZMC CN 96	151 cm	58 kg	11 yrs	Skagerrak
Female 3				
ZMC CN 237	—	—	old	Danish waters
Male 1				
ZMC CN 165	138 cm	40 kg	4 yrs	Northern North Sea
Male 2				
ZMC CN 158	106 cm	24 kg	0 yrs	Kattegat
Male 3				
ZMC CN 170	133 cm	27 kg	3 yrs	Northern North Sea
Slijper female				
RMNH 31225	—	—	8 yrs	Southern North Sea

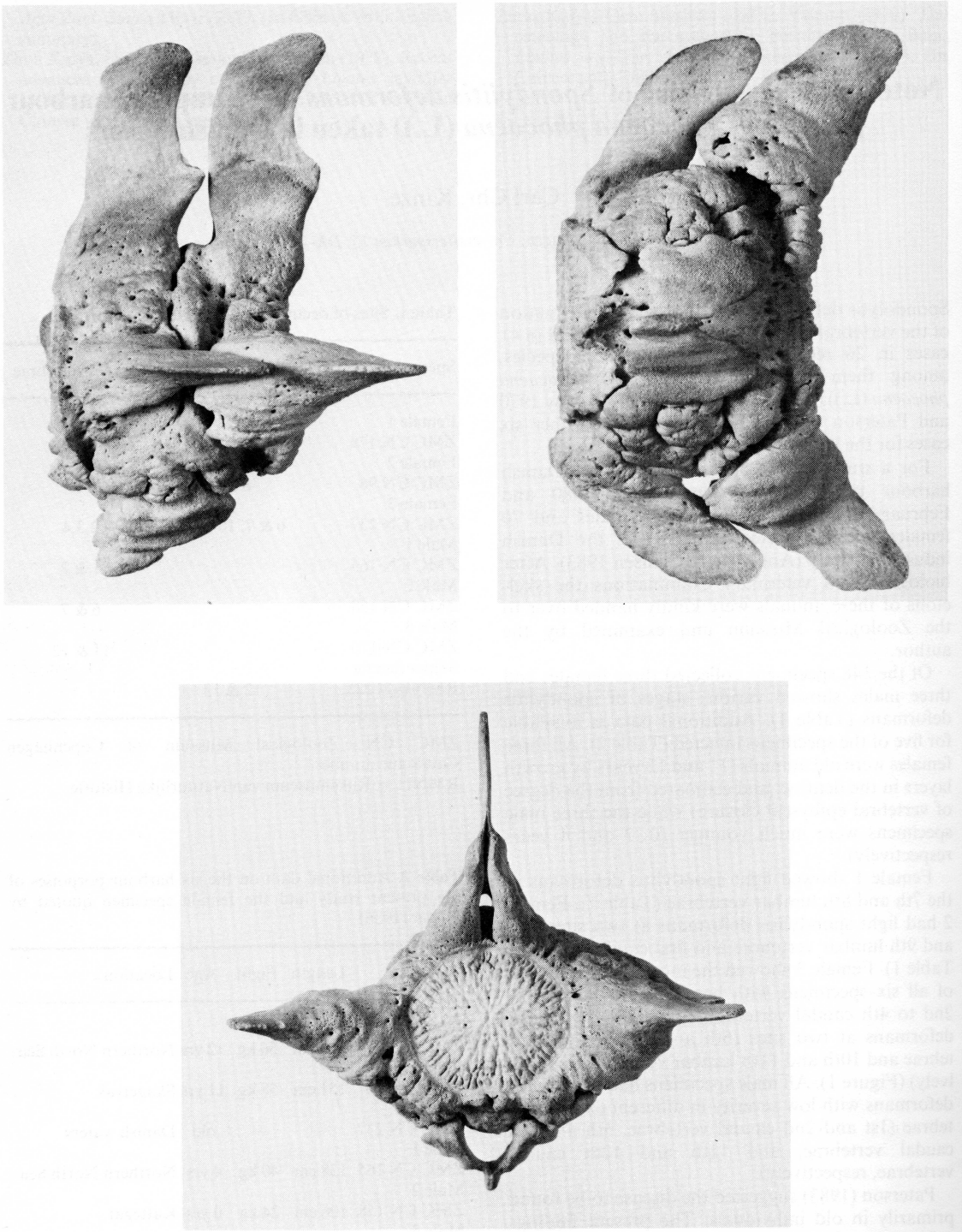

Figure 1. Heavy spondylitis deformans in female 3, in cranial, ventral, and lateral views (Photographs by G. Brovad).

specimens of this study were quite young animals, two having just gained sexual maturity, and one specimen being a four months old calf. The female specimen quoted by Slijper (1936) was according to himself a young animal with light spondylitis deformans ('sehr glatte Verbindung') in the 12th and 13th lumbar vertebrae. A recent age determination of the same specimen (RMNH 31225; Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands) by Noldus & Deklerk (1984 and unpublished data) has challenged the older age quotation as the animal in question was found to be 8 years old. In conclusion spondylitis deformans has been demonstrated in ages from 0 to 12 years, and the disease is not restricted to old animals only. Heavy spondylitis deformans has only been found in quite old animals, indicating that the disease will develop through a number of years. None of the six specimens in question apparently have been harmed by the disease, with female 3 as a possible exception because of a constriction of the spinal channel (Figure 1). Both females for which data is available were lactating and pregnant and all three males were found to be well nourished (Andersen & Clausen, unpublished data).

Andersen & Clausen (1983) suggested that the harbour porpoises taken as by-catch in the Danish industrial fishery are representative for the whole stock exploited. As only three of 70 females and only three of 78 males showed spondylitis deformans an indication of low disease frequency in nature is given.

The cause of the disease is still obscure, but inadaquate feeding conditions could be an explanation.

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