

RECREATIONAL ACTIVITIES
AND WILDLIFE ASPECTS IN THE
DANISH WADDEN SEA

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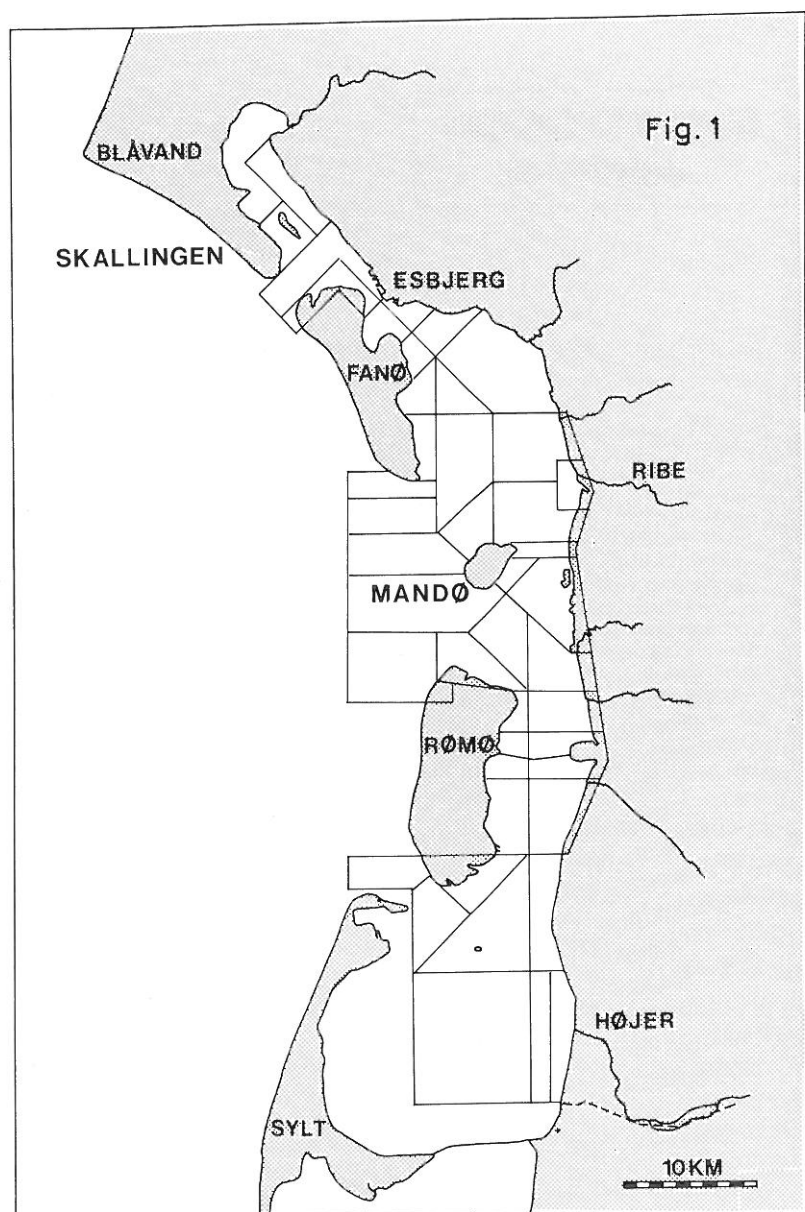
Kurzfassung

Der Fremdenverkehr im dänischen Wattenmeer ist beträchtlich. Die Hauptmenge der Touristen befindet sich an den Sandstränden der Halbinsel Skallingen und der Inseln Fanø und Rømø. Kingo JACOBSEN hat in diesen Gebieten die Entwicklung des Fremdenverkehrs und seinen gegenwärtigen Stand beschrieben. Der Fremdenverkehr auf Skallingen wurde eingehender von Grethe THIESEN analysiert und die Auswirkungen auf die Vegetation wurden von Peter FREDERIKSEN untersucht.

Die genannten Autoren beschreiben nur e i n e n Aspekt der Beanspruchung des dänischen Wattenmeeres durch den Fremdenverkehr. Er ist gekennzeichnet durch große Besuchermengen auf einem bescheidenen Teil der Fläche. Ferner suchen diese Touristen nicht das Erlebnis der Eigenart des Wattenmeeres samt seiner Flora und Fauna, sondern sind mehr allgemein an den Sandstränden und der Nordsee interessiert.

Der vorliegende Bericht befaßt sich mit einem anderen Teil des dänischen Wattenmeeres, nämlich mit den eigentlichen Watten sowie den angrenzenden Salzwiesen und Küstenstreifen. Dieses Gebiet, das im Gegensatz zu den typischen als ein sekundäres Tourismusgebiet betrachtet werden kann, ist durch niedrige Besucherzahlen gekennzeichnet. Jedoch zielen die Aktivitäten dieser Besucher stärker auf das Erleben der Wattenlandschaft und/oder ihrer Tierwelt. Aus dieser naturorientierten Freizeitbeanspruchung einerseits und dem Wunsch zur Erhaltung einer reichen Fauna andererseits ergeben sich Konflikte. Es wurde der Versuch gemacht, dieses Problem durch Einrichtung des Wildschutzgebietes "Vildtreservat Vadehavet" zu lösen, in welchem der öffentliche Zugang in verschiedenen Bereichen eingeschränkt ist.

Die Station für Wildbiologie hat mit einer Studie begonnen, um Kenntnisse zu gewinnen, von welcher Art und Bedeutung die Beanspruchung durch den Fremdenverkehr im Gezeitenbereich des dani-



schen Wattenmeeres außerhalb der Sandstrände ist. Die Untersuchung besteht zunächst in einer Kartierung der Erholungsaktivitäten. Alsdann werden deren biologische Auswirkungen betrachtet. Beispiele der Kartierung der Erholungsaktivitäten werden gegeben. Es zeigt sich, daß man die Bedeutung einer Aktivität, selbst wenn sie bescheiden ist, nur bedingt aufgrund quantitativer Kriterien bewerten kann. Die Bewertung muß sich mehr nach qualitativen Kriterien richten.

1. Introduction

Most tourists in the Danish Wadden Sea area are to be found on the sandy beaches of the Skallingen peninsula south of Blåvand, and the islands of Fanø and Rømø. JACOBSEN (1977) has described the development of tourism and its present status in these places. The tourism at Skallingen has been analyzed by THIESEN (1977), and effects on the vegetation have been studied by FREDERIKSEN (1977), HYLGAARD (1980), HYLGAARD & LIDDLE (1981). The recreational use of that part of the Danish Wadden Sea described by these authors is characterized by a very large amount of visitors in a limited area. Furthermore, these tourists are probably not oriented towards the special nature of the Wadden Sea and its flora and fauna, but more generally towards the sandy beaches of the North Sea.

In relation to wildlife conservation, the inter-tidal area of the Danish Wadden Sea with its tidal flats, marshes and coasts is more important. This area, which in contrast to the typical tourist areas can be considered as a secondary tourist area, is characterized by a low number of visitors. On the other hand, however, the recreational activities of these visitors are probably more aimed towards experience of the unusual landscape, its flora, and particularly its fauna.

Fig. 1: Division of the Danish Wadden Sea. Note that the sandy beaches of Skallingen, Fanø and Rømø are not included in the censuses.

In the winter of 1979/80 the Game Biology Station initiated a study to describe the species, numbers and distribution of shorebirds in the Danish Wadden Sea in relation to the game reserve "Vildtreservatet Vadehavet", established in 1979. The game reserve is described in more detail by F. EJLERSEN in this report. The reserve includes the whole Danish Wadden Sea, and is divided into zones with different restrictions on human activities, mostly concerning hunting. The distribution of wildlife will be analyzed later in respect to these zones and other typical biological factors, such as food supplies and sediment types.

Wildlife was censused by aircraft about once per month at high tide and from the summer of 1980, also once per month at low tide in the bird migration period, i.e. April-May and August-October. During these routine flights, it became clear that different human activities in the area could be of importance concerning the distribution of wildlife, and therefore recording of all activities started in April 1980.

The aim of this study is to analyze the distribution of birds and mammals in relation to human activities in the Danish Wadden Sea. Concerning the preliminary results, only the relations between recreational activities and the Common Seal (*Phoca vitulina*) are given.

2. Recording of human activities

The Danish Wadden Sea was divided into a number of sub areas (Fig. 1). Censuses were made in the areas during high tide as well as low tide flights. During low tide the flight route was considerably longer because the exposed mudflats were carefully covered; during high tide most flying was along the water's edge. The duration of the two kinds of flight was 5 and 3 hours, respectively.

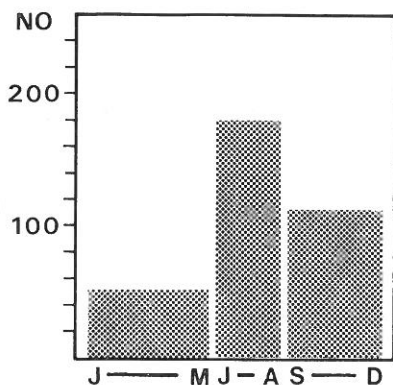


Fig. 2:
Mean number of recreational human activities throughout the year.

People on the inter-tidal areas, the coasts and the salt marshes were recorded together with their position and activities based on equipment.

Single boats were recorded as one unit irrespective of the number on board, while if they go ashore they are recorded individually.

The censuses have only run for one and a half years, and it is too early for detailed analysis, e.g. holidays and days with different kinds of weather are not yet satisfactory represented. Furthermore attention should be paid to the method itself, which entails some restrictions, mostly regarding weather. Censuses only took place during suitable weather conditions which is normally on clear windy days. On warm and rainy days the visibility is too poor.

3. Recreational activity

The temporal distribution of human activities (including boats) during high tide shows highest activity during summer, and next

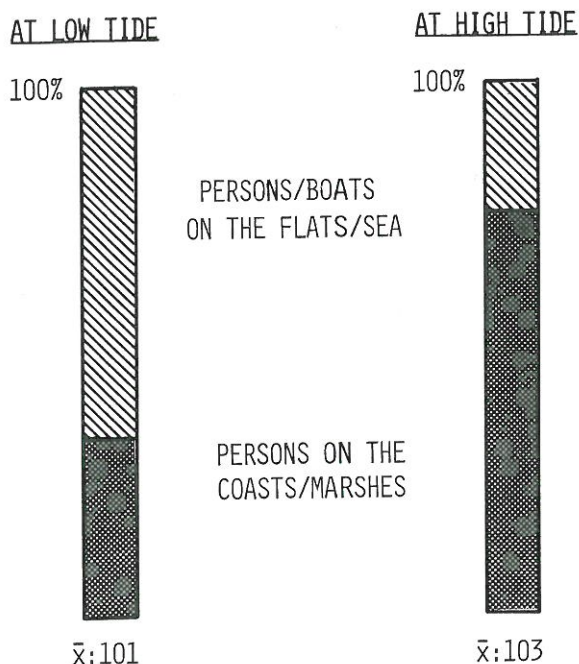


Fig. 3: The annual percentage distribution of recreational activities at high tide and low tide. The mean number of recordings/census (\bar{x}) is given.

in autumn (Fig. 2). It is due to the general fine weather from May to September for outdoor activities i.e. fishing and reinforced by the summer holiday. During autumn the hunting season contributes to the activities. In spring however nearly all hunting- and fishing activities cease.

The number of people and boats was almost identical at high

Fig. 4: Recreational activities recorded at high tide from April 1980 to September 1981. Mean number and frequency are shown.

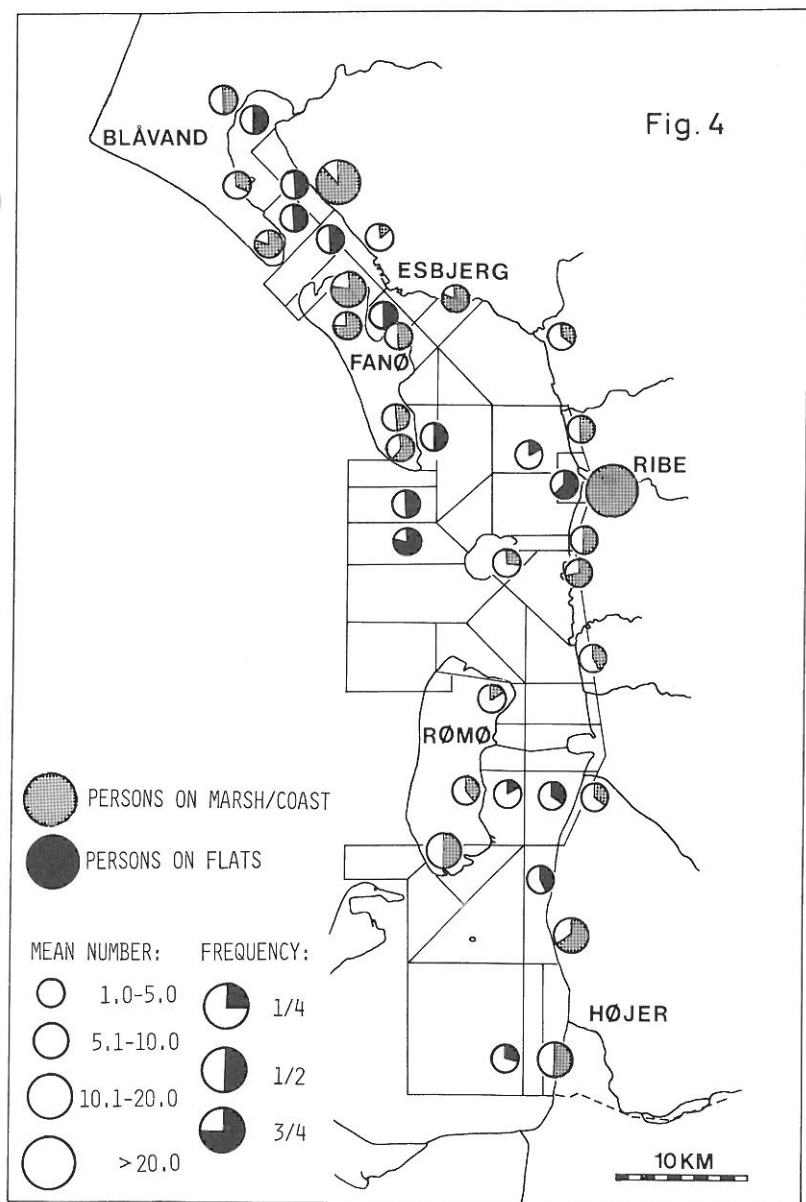
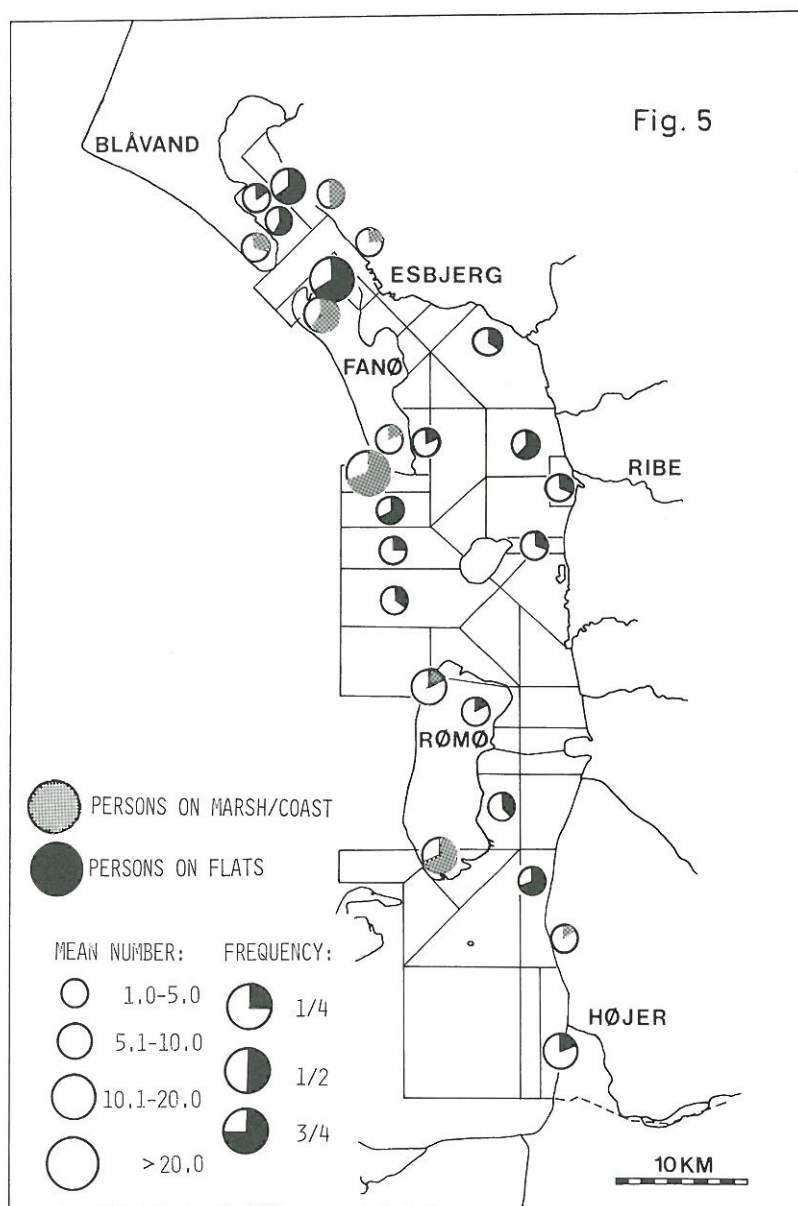


Fig. 5



and low tide (Fig. 3). The mean number of units was about 100 for both types of censuses, whereas the distribution of people was quite different. At high tide most people walk along the beach and the salt-marshes, while at low tide they are in the inter-tidal area.

The distribution of people and boats during the period April 1980 - September 1981 is shown for high tide (Fig. 4) and low tide (Fig. 5). The figures show the mean number of records per census for the various areas together with the frequency, i.e. how often a recreational activity was recorded in an area, e.g. if 12 records were made during 18 flights the frequency was $2/3$.

During high tide the distribution of most activity is by the coastline in the northern part of the Danish Wadden Sea and outside Ribe (Fig. 4). Records at sea were also primarily in these places. In the southern part of Rømø and the sea east of it there were also some activities. However, the northern part of Rømø and the area between Rømø, Fanø and the mainland have nearly no recreational activities.

At low tide (Fig. 5) most activities are on the tidal flats or at sea, and chiefly localized in the same parts of the area as high tide records. It should be noticed that these areas to the west (between Rømø and Fanø) are visited by people relatively often.

4. Distribution of people in summer and autumn

Considering the mean number and frequency during high tide and low tide, it must be remembered that in winter and spring few people use the area. To obtain the most relevant informa-

Fig. 5: Recreational activities at low tide from April 1980 to September 1981. Mean number and frequency are shown.

Fig. 6

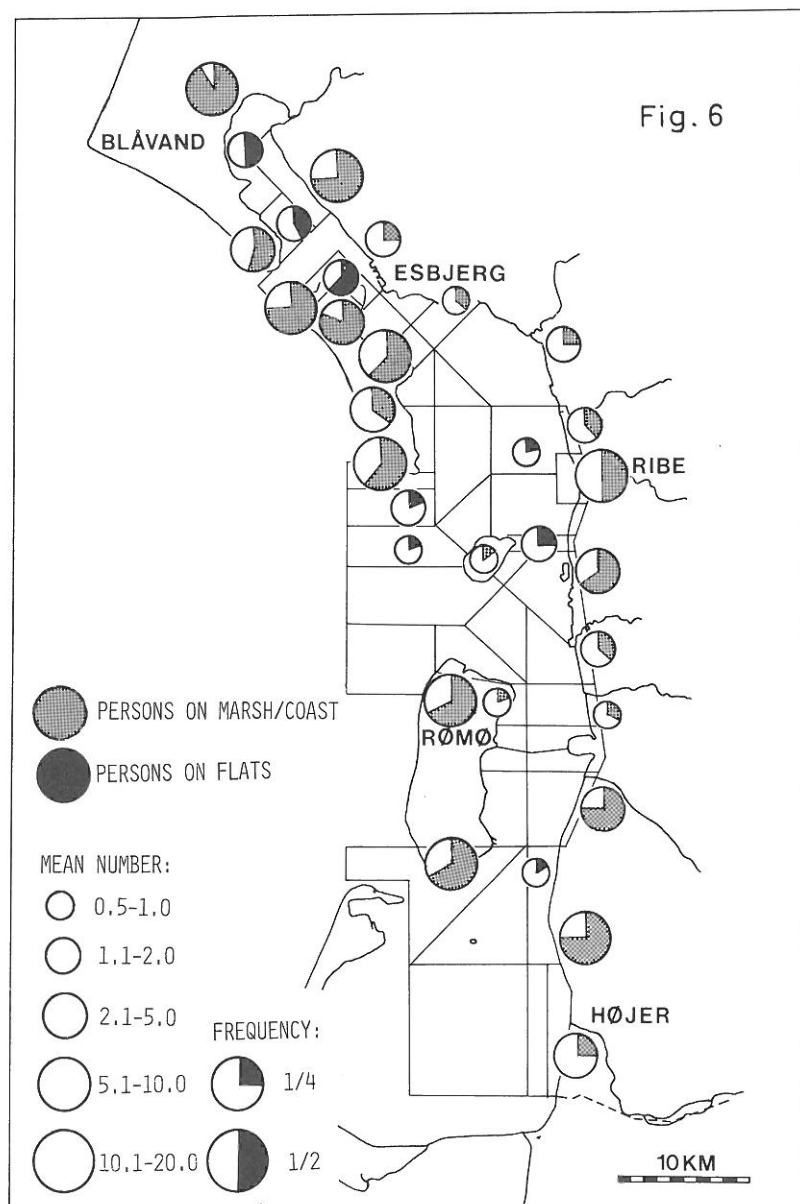


Fig. 6: Distribution of persons at high tide in summer and autumn. Mean number and frequency are shown.

tion for both the breeding season of the Common Seals and the autumn migration of birds, figures from the summer and autumn period (i.e. June - December) are shown, with activities of people and boats shown separately.

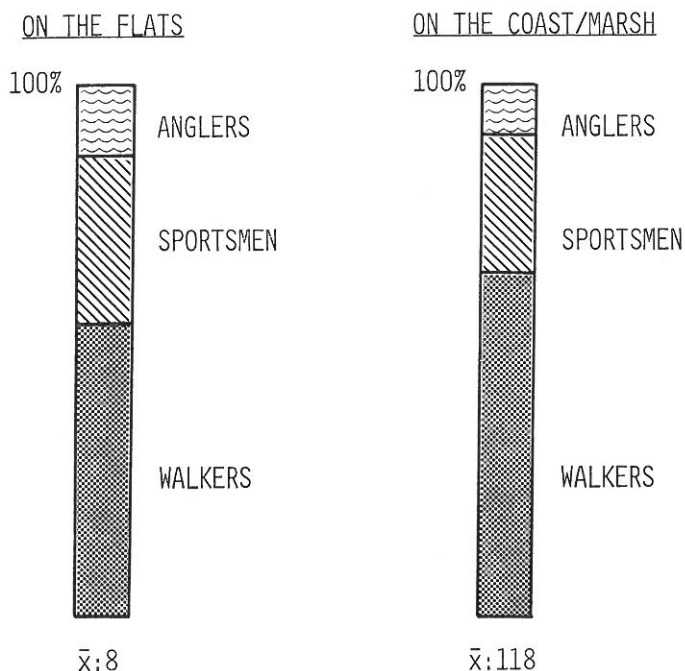


Fig. 7: Various activities at high tide, summer and autumn, expressed in percentages. The mean number of recordings/census (\bar{x}) is given.

During high tide most people were recorded north of Esbjerg, on the north, east and south coast of Fanø, on the coast from Ribe to the Rømø Dam and on the north and south coast of Rømø.

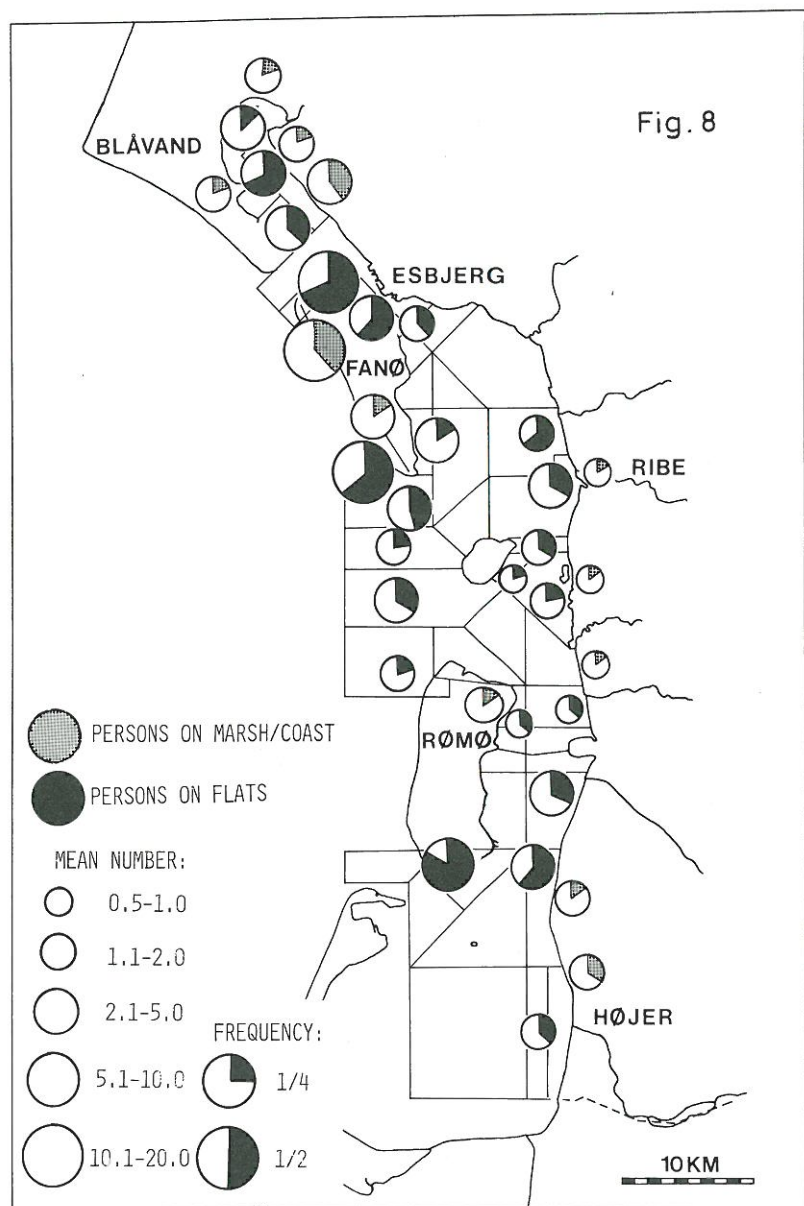


Fig. 8: Distribution of persons at low tide in summer and autumn. Mean number and frequency are given.

(Fig. 6). The human activity on the coast/marsh and on the tidal flats/sea were dominated by walkers and sportsmen (Fig. 7).

At low tide most activity was on the tidal flats north of Esbjerg, around Fanø, outside and south of Ribe and south and east of Rømø (Fig. 8). On the high sands between Rømø and Fanø there was remarkably high activity. Walkers dominated the tidal flats, but lugworm diggers and anglers were also numerous (Fig. 9). On the coast/marsh the walkers dominated and

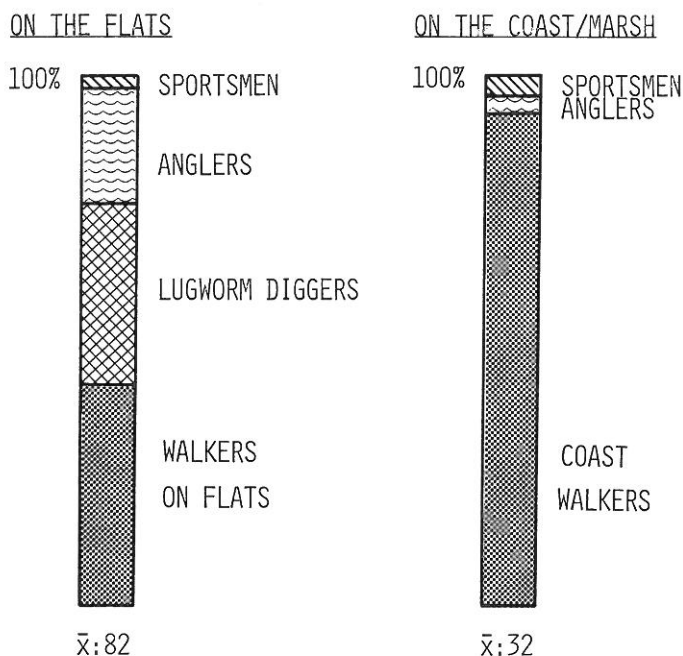


Fig. 9: Various activities at low tide, in summer and autumn, expressed in percentages. The mean number of recordings/census (\bar{x}) is given.

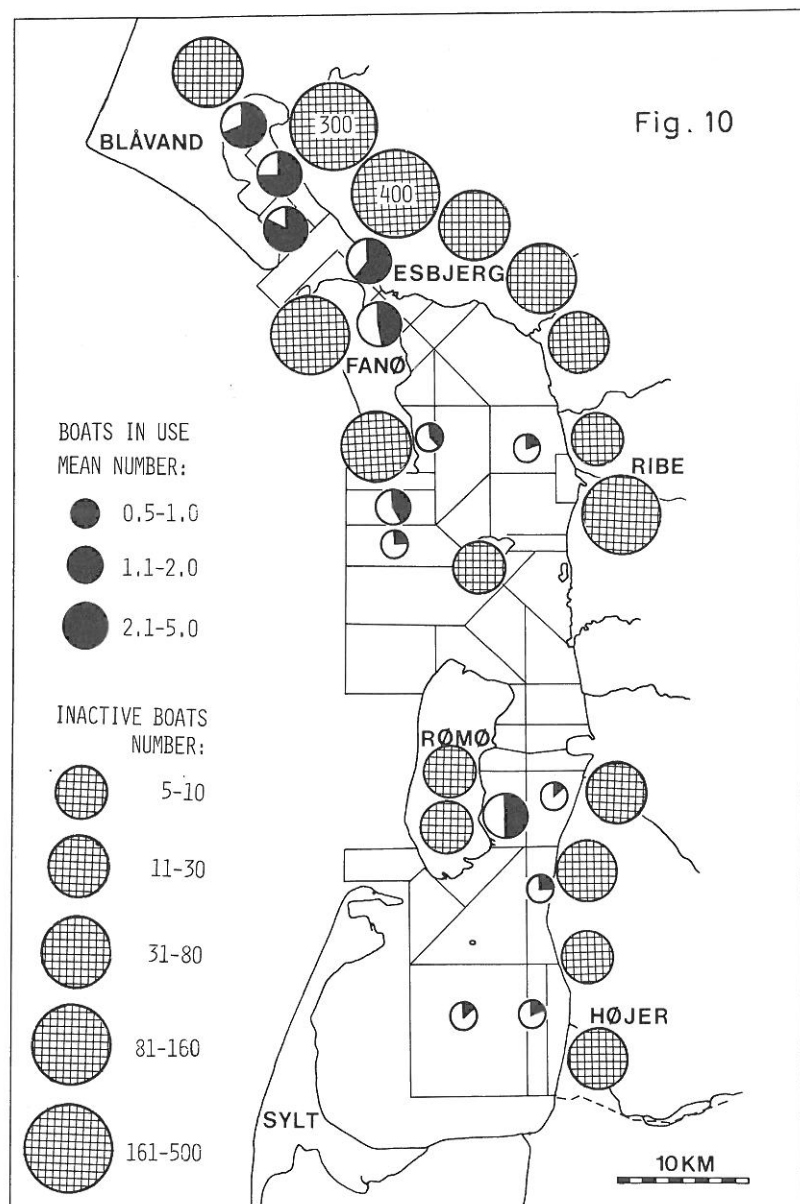


Fig. 10: Distribution of boats in use or idle. For boats in use the mean number and frequency are shown. For boats idle the figure shows maximum number anchored, in harbour or beached at different localities. For further explanation see Fig. 8.

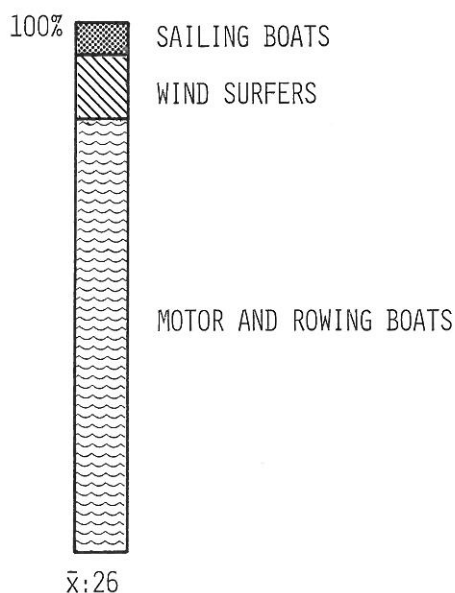


Fig. 11: Percentage of types of boats in use during summer and autumn. The mean number of recordings/census (\bar{x}) is given.

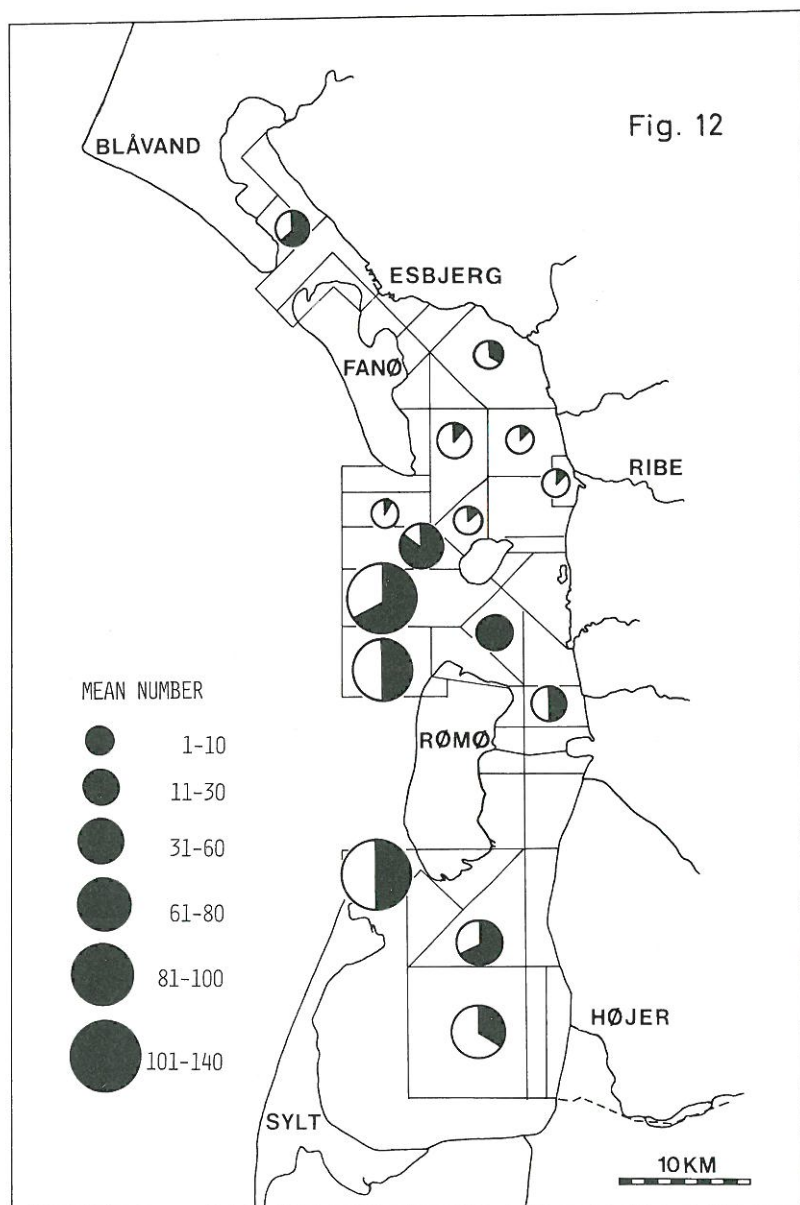


Fig. 12: Distribution of seals during summer and autumn. Mean number and frequency of seals on banks are shown. For further explanation, see Fig. 8.

FREQUENCY OF SEALS
IN AN AREA

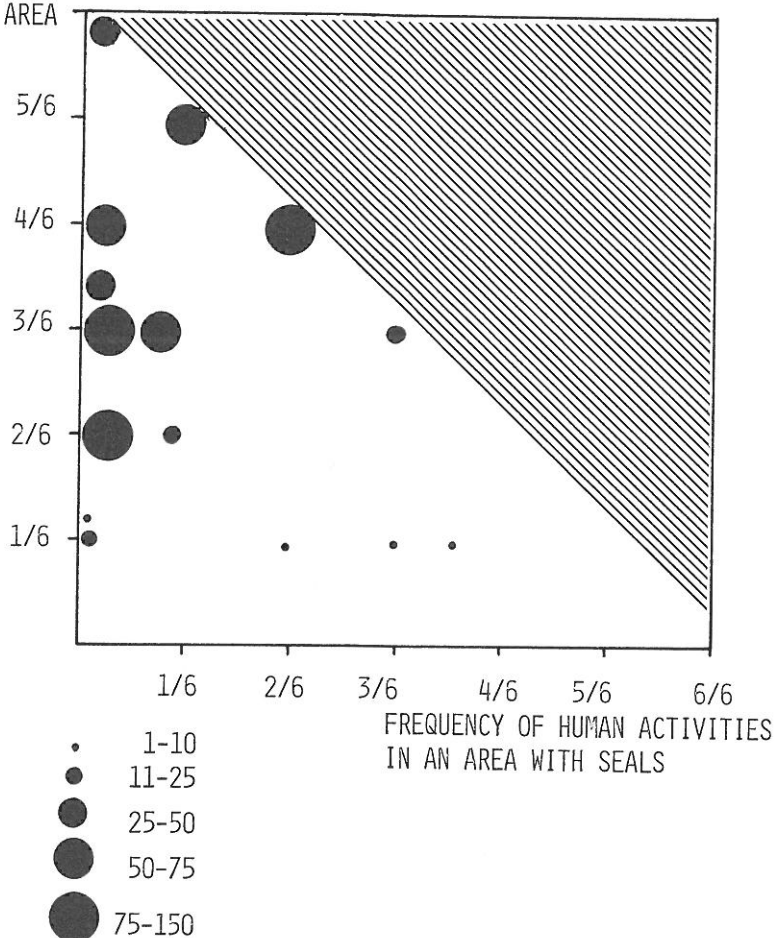


Fig. 13: Relationship between the frequency of seals and human activities in an area with seals during six censuses in summer and autumn. The mean number of seals in the areas is shown.

sportsmen were almost negligible in contrast to the situation at high tide (Fig. 7).

5. Distribution of boats in summer and autumn

Boats comprised only a small proportion of the total records. At high tide in summer and autumn the percentage was approximately 20. At low tide sailing activity was lower, comprising 9% of the records. Figure 10 shows the distribution of boats in use as well as idle, i.e. anchored, in harbour, or beached.

Activities involving boats were most intensive in the area around and north of Esbjerg. In the other part of the Danish Wadden Sea activity seemed to be modest. Comparison between the number of boats in use and boats idle showed that only a few percent were used on a occasional day. Motor-boats and rowing-boats with an outboard motor were the dominant types (Fig. 11). Sailing-boats comprise only 6%, the reason being that the Danish Wadden Sea is rather shallow outside the deeps, making it difficult for sailing-boats to manoeuvre inside the islands.

Wind surfers make up 12% of the total number of boats. Only two years ago they were seldom seen, and it must be realized that the number will increase in the next years and create serious problems, because only a few cm of water are needed. Previously birds and mammals were relatively undisturbed in many places because motor-boats require about half a metre of water. In future it is to be feared that wind surfers will spread to many places.

6. Recreational activities and the Common Seals

During six flights at low water the number and position of Common Seals were recorded (Fig. 12). Normally there was only one seal-bank in each area.

The frequency of people and seal is shown together with the mean number of seals in that area (Fig. 13). The figure shows that the seals preferred areas with low human activity. It also shows that banks in these areas were most regularly used for resting, and that the largest flocks were found in these places.

There seems to be no clear relationship when comparing the number of seals and human activities. This together with the result of Figure 13 indicates that it is the first disturbance within a period (a day or a low water period) that creates the most marked effect, and when subsequent disturbances occur the animals have already left the area or the places. In this way the frequency of disturbance is a more relevant measure than the actual number of disturbances.

It appears from this example that, even if the recreational activities are modest in extent, one must be careful when evaluating the quantitative meaning, and any evaluation should rather be qualitative.

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7. Summary

Tourism in the Danish Wadden Sea area is rather considerable. The main part of the tourists are localized on the sand beaches of the peninsula of Skallingen and the islands Fanø and Rømø. Kingo JACOBSEN has described the development of tourism and its present status in these places. The tourism at Skallingen has been profounder analysed by Grethe THIESEN and the effect on the vegetation has been studied by Peter FREDERIKSEN.

The part of the recreational use of the Danish Wadden Sea which has been described by these authors is characterized by a very large amount of visitors at a modest area. Furthermore, these tourists are not oriented towards the special nature of the Wadden Sea and its flora and fauna, but more generally towards

the sandbeaches and the North Sea.

In this paper another part of the Danish Wadden Sea will be treated. It concerns the intertidal part with marshes and coasts. This area, which in contrast to the typical tourist areas can be considered a secondary tourist area, is characterized by a low number of visitors. But on the other hand the recreational activities of the visitors are more aimed towards the experience of the special landscape of the Wadden Sea and (or) towards its fauna. This recreational nature-oriented use on one side and the wish to preserve a rich fauna on the other side give conflicts. Attempts have been made to solve these problems by establishing the game reserve "Vildtreservat Vadehavet" with restrictions of public traffic in different zones.

To obtain knowledge of the recreational use and the importance of it in the intertidal part of the Danish Wadden Sea except the sandbeaches the Game Biology Station has started a study which in the first place will map the recreational activities in the area. Later the biological consequences of the recreational activities will be treated. Examples of the mapping of the recreational activities will be given. It will appear that even if the activity is modest, one must be careful to evaluate the meaning of it on quantitative grounds, but an evaluation must rather be placed on qualitative grounds.

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