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Population Trends and Studies on Breeding Waders at the Nature-Reserve Tipperne

Ole Thorup

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Tipperne is a nature-reserve in Ringkøbing Fjord, a large brackish lagoon in western Jutland, Denmark. The reserve covers about 700 hectares of land and about double that of low-water areas. It is a very old reserve, established in the beginning of the century, and since 1928 it has been manned, during at least part of the year. In the entire period since then the breeding birds have been counted annually. From 1928 to 1963 the breeding waders were

counted by a fairly standardized method, by counting of nests in the entire area, mainly in the second half of May. In 1964 the nest-finding and nest-counting was stopped, mainly because the number of breeding waders was then very low.

In the first 25 years after the establishment there was intensive hay-making and summer-grazing by cattle and horses. Due to a shift of the farming in the neighbourhood, this had decreased during

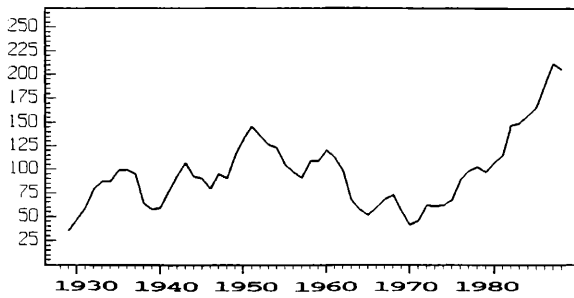


Figure 1. Breeding pairs of Lapwing in Tipperne 1928-1989 shown by a 3-year sliding average line.

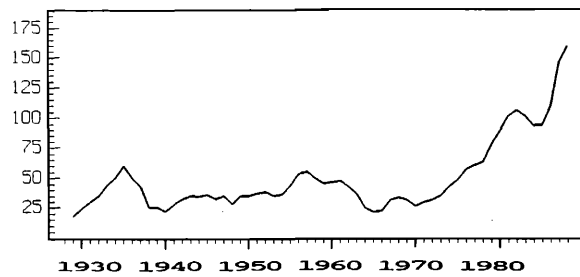


Figure 2. Breeding pairs of Black-tailed Godwit in Tipperne 1928-1989 shown by a 3-year sliding average line.

the 1950s and had almost stopped. The natural succession then gave the meadows a high and dense vegetation.

Since 1963 different ways of mapping of territories have been used, and these have become more and more complicated with the increasing numbers of breeding birds. To give an impression of the difficulties: since a new management regime reintroduced grazing and hay-making in 1973 the numbers of breeding waders have grown 10-fold. In 1985 I developed a new, standardized and fairly comprehensive counting method. This has been used since 1986. It is planned to use this method in the future.

Figure 1 to 5 show the numbers of breeding pairs of selected waders in the period 1928-1989. The Lapwing population was small in the 1960s and beginning of the 1970s (Figure 1). With the recent 'opening-up' of the meadows the population has increased markedly. The population trend of the Black-tailed Godwit *Limosa limosa* (Figure 2) has been fairly parallel to that of the Lapwing, although

Godwits seem to have suffered in the past under the very intensive hay cutting and summer grazing practices of that time.

In contrast to the other breeding waders in Tipperne, the Avocets do not rear their young on the meadows, but lead them to the open mudflats as soon as possible after hatching. The Avocet is thus not only dependent on open meadows during the breeding season. As a colony-breeder Avocet numbers seem to fluctuate strongly with the pressure from predators, especially mammalian predators such as the fox are important. After a long period of heavy predation by foxes, Avocet numbers have increased to 350-500 pairs in recent years (Figure 3). The increase is a result of the possibility to move to safer breeding areas where deep water channels hinder the regular visits of this predator.

The salinity and water-level in Ringkøbing Fjord are controlled by a sluice connecting the fjord with the North Sea, and in the period 1928-1989 the salinity has fallen, and the organic component of bottom sediments has increased.

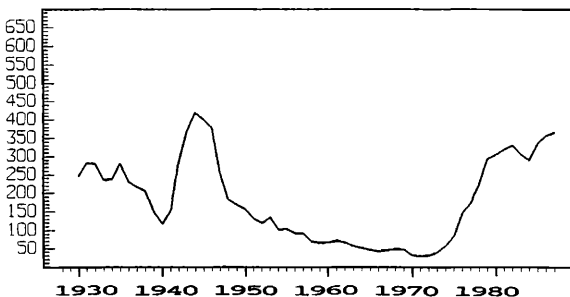


Figure 3. Breeding pairs of Avocet in Tipperne 1928-1989 shown by a 3-year sliding average line.

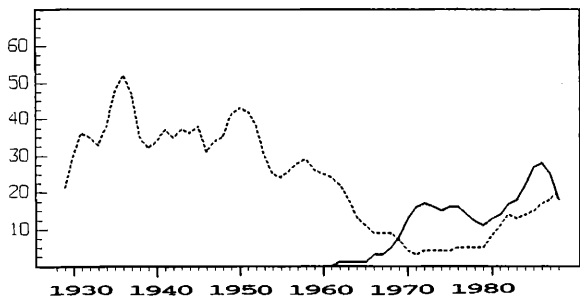


Figure 4. Breeding pairs of Oystercatcher (hatched line) and Common Snipe (solid line) in Tipperne 1928-1989 shown by 3-year sliding average lines.

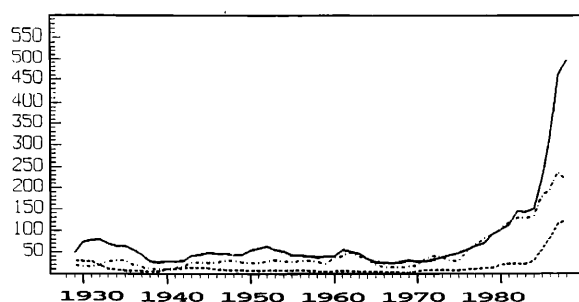


Figure 5. Breeding pairs of Redshank (solid line), Dunlin (single hatched line), and breeding females of Ruff (double hatched line) in Tipperne 1928-1989 shown by 3-year sliding average lines.

This is caused by the pollution from fertilizers and waste water from the rivers. Both these factors have combined in producing increased vegetation cover, increased vegetation height and have led to a decrease in the Oystercatcher *Haematopus ostralegus* population and have allowed Snipe *Gallinago gallinago* to reclaim the area as a breeding bird (Figure 4).

In Tipperne recent conditions seem especially good for the three breeding species, which place their nests in tufts of grass in the open meadows (Redshank *Tringa totanus*, Ruff *Philomachus pugnax* and Dunlin *Calidris alpina*).

Figure 5 shows population trends of these species. An explosive increase, especially in the years after 1984, occurred. This was due to a 'minor' change in the management where the grazing intensity was reduced from 600-700 head of cattle to 300-400, and where hay-making practices were altered so that certain areas were cut annually and the rest was cut at least once in every three years.

On Tipperne 1500 to 1800 breeding pairs of waders are spread over about 500 hectares of suitable wader habitat, this gives an overall density of 3 to 4 pairs per hectare. However, the waders are not evenly distributed over the whole area. The island 'Fuglepold' (meaning 'Bird-islet') first became an island in the winter 1980-81, when a canal was dug between Fuglepold and the mainland. Previously it had for many years been a peninsula. On the island the meadow is cut every summer, and the area is grazed by cattle usually from the middle or the end of June. The area of the island is only about 35 hectares. Approximately 500 pairs of Black-

headed Gulls *Larus ridibundus*, almost 100 pairs of Arctic Terns *Sterna paradisaea* and up to 750 pairs of waders breed on the island. In 1986 we realized that the only way we could get reasonable data on the number of breeding waders on this island was by an accurate nest-search and count.

Figure 6 shows the nests found in 1988. In that year almost 700 nests of waders were found, of which just more than the half were Avocet nests. The second-most abundant wader was the Redshank with about 150 nests found. That means, at 5 pairs of Redshank per hectare or 500 pairs per square km, a very high density.

1988 was climatically a good breeding year - warm and sunny and with a suitable rainfall. In contrast 1989 was extremely dry and cold throughout most of the breeding-season. Furthermore the large Avocet-colony was affected by the presence of a fox in the last week of April and first week of May, which made most Avocets leave Fuglepold and move to other places within the reserve. It also led to a very late start, at the end of May, by the rest of the breeding pairs. Although all species were delayed by the drought and the minimal growth of vegetation almost 350 pairs of waders bred on Fuglepold, of which 250 pairs were species other than Avocets. This means that even in the bad breeding year of 1989 Fuglepold still housed about 7 pairs of waders per hectare, of species usually known for their territorial behaviour.

The many nests found are monitored regularly until incubation has ended. In addition to the breeding numbers I thus get fair data on phenology and hatching success. It is impressive that our hatching success is on average at the 75% level for all species of waders. In 1989 the hatching success was slightly lower mainly due to a great loss of very early clutches. However the average hatching success was still about 65%, although differing between species from 44% in Black-tailed Godwit to 83% in the Dunlin. Most of the breeding data is presented in an annual breeding bird report (in Danish) covering Tipperne and the adjacent areas. The analysis and publication of the large amounts of data resulting from the yearly counts on Tipperne is planned for the near future.

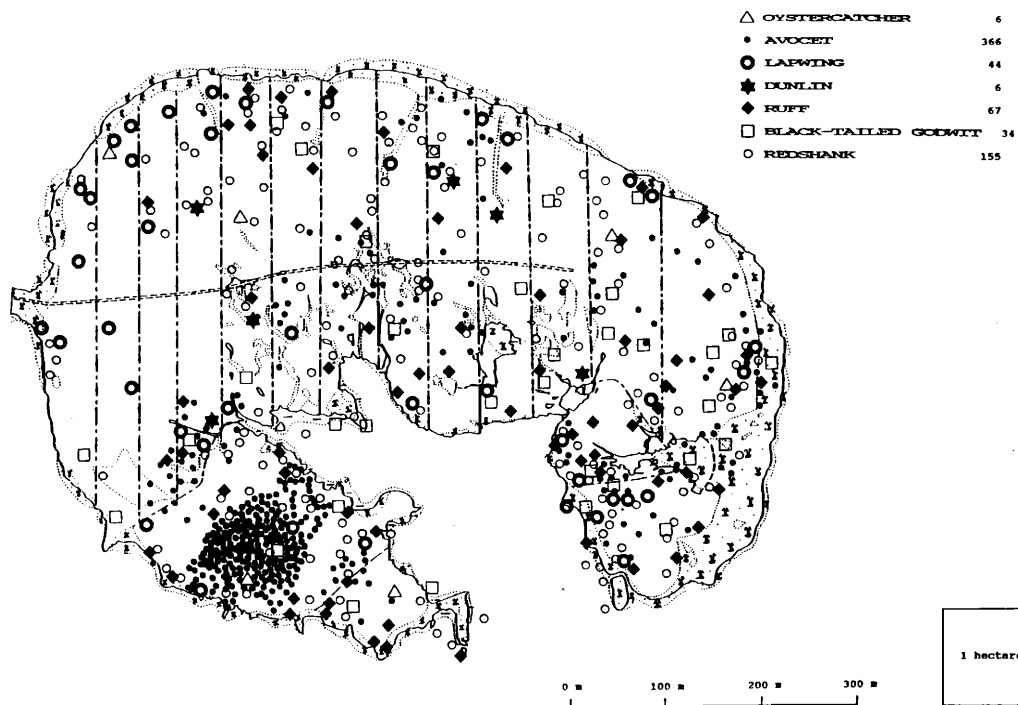


Figure 6. Nests found in Tipperne on the island Fuglepold in 1988.

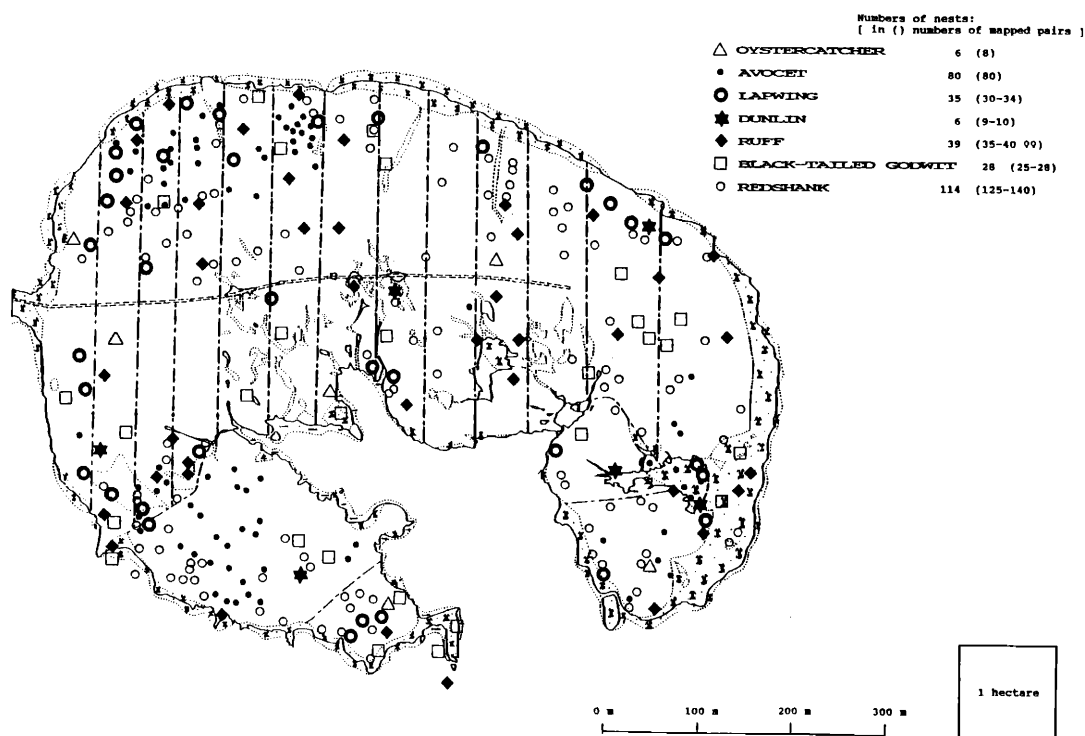


Figure 7. Nests found in Tipperne on the island Fuglepold in 1989.