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A Checklist of Planktonic Diatoms and Dinoflagellates from Helgoland and List (Sylt), German Bight

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1. Resulting from long-term sequential observations on marine phytoplankton from two localities in the German Bight a checklist of 105 diatoms and 93 dinoflagellates is presented.
2. Nearly all species listed are provided with data on frequency and seasonal occurrence.

Introduction

During the years 1966–1971 net samples from surface water in the Helgoland area (54° 11' N, 7° 54' E) were collected continuously every workday and investigated for various purposes. Besides life history studies on selected phytoplankton species more than 170 species were documented in the living stage by original photos and compiled for an introductory account in marine phytoplankton (Drebes 1974). In the following years (1972–1974) net samples from the List area (55° 01' N, 8° 27' E) have been examined two times a week. From both stations all species observed were regularly listed, with additional remarks on their frequency. Thus, the checklist presented here informs also about seasonal occurrence and frequency of the species, which might be of interest for ecologists as well as for taxonomists.

Sampling was carried out with nets of different mesh size: 20 μm , 28 μm , 75 μm . The samples reached immediately the laboratory nearby, and the plankton organisms were still alive when they came to observation. Identification of the species occurred routinely in small Petri dishes under a dissection microscope. About 200 species could be recognized by this simple method. Naturally, in uncertain cases water mounts or other special preparations had to be made for observation with microscopes of higher magnifications in bright field and phase contrast, respectively. Our experiences have shown that many species can be identified in the living stage by simple distinctive marks. Nevertheless, identification of living phytoplankton remains a difficult task, so long as the diagnoses of species refer to a large extent only to some persistent cell structures. These structures, e. g. the silica shells of

diatoms or the cellulosic envelopes of dinoflagellates, are normally masked in the living organism, so that time consuming preparations are always necessary. When ever possible, a diagnosis should start with a fully description of the whole living organism, before other special structures are regarded. Also biogeographical data can be of great taxonomical value.

The checklist restricts to the diatoms and the dinoflagellates. With the methods used only a few species of other algal groups, belonging to the nanoplankton, could be identified. Therefore, they were neglected here as well as the numerous pennate diatoms from the tidal flats in the List area, which are often washed into the littoral plankton. Excepting the seasonal bloomings of the haptophycean *Phaeocystis pouchetii*, nanoplankton (excluding the small diatoms and dinoflagellates) and ultraplankton (μ -flagellates) seem to be at least in the German Bight less important for primary production. Only those species are listed, which have been personally observed by the authors. Previous accounts are coming mostly from short term observations at various stations or from sections through the North Sea (e.g. Braarud *et al.* 1953, there further literature). Reports concerning the complete species composition of our areas investigated combined with long term sequential observations, in order to include seasonal variation, are apparently lacking or remained unpublished. A comprehensive species list of Uherkovich (1970) results from a short trip to Helgoland regarding merely the species composition of the August plankton. However, some species cited have not been found by the present authors, so that either misidentifications or even contamination from nets used in other regions cannot be excluded. Also, a few dinoflagellates noted by Wulff (*in* Peters 1930) from Helgoland waters are possibly confused with other species. Regarding the List area, the studies of

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