

The Distribution of *Undaria pinnatifida* (Phaeophyceae, Laminariales) on the Coast of St. Malo (Brittany, France)

A. Castric-Fey, A. Girard* and M. Th. L'Hardy-Halos**

Laboratoire de Biologie Marine, Collège de France, 29900 Concarneau, France

* A. D. M. S Association Découverte du Monde Sous-marin, Marinarium, Collège de France, 29900 Concarneau, France

** Laboratoire de Phycologie Marine et de Morphogénèse, Faculté des Sciences, G. P. P. M. A, 72017 Le Mans Cedex, France

(Accepted 24 May 1993)

Abstract

A subtidal population of the Japanese brown alga *Undaria pinnatifida* (Harvey) Suringar (Laminariales, Phaeophyceae), which has been cultured in the Rance estuary since 1983, has been recorded by diving surveys of the subtidal rocky benthos at St. Malo, Brittany. A description of the occurrence of this alga is given and the possible competition between *Undaria pinnatifida* and the opportunist alga *Saccorhiza polyschides* (Light-foot) Batters on the north and south Brittany coasts is discussed.

Introduction

The brown seaweed *Undaria pinnatifida* (Harvey) Suringar, known for centuries in China, Japan and Korea under the name 'wakamé', has been subjected, particularly in the Japan and Korea, to intensive cultivation on long lines immersed in the natural environment. The palatability and nutritional value of this alga, the knowledge of how to grow it in nature since ancient times in Asia, as well as a very promising potential market has prompted some aquacultors to attempt cultivation and exploitation of *U. pinnatifida* in Brittany. The sea around Brittany displays thermal and other conditions similar to those found in seas of the Far East where *Undaria* is indigenous. First attempts at cultivation of *Undaria pinnatifida* in France were performed in 1981 (Pérez *et al.* 1981), and subsequently the project was expanded in 1983 to other locations around the coast of Brittany, including the Rance estuary and the Islands of Ouessant and Groix. These trials permitted local phycologists to rapidly master the techniques for growing *Undaria pinnatifida* in the natural environment (Pérez *et al.* 1984, 1988).

Undaria settlements have now been in operation (Fig. 1) in relation with the CEVA (Centre d'Etude et de Valorisation des Algues, Pleubian) at Ouessant, in the Rance estuary, in the 'Abers' since 1987, on the coasts of Trieux, Pleubian, Guilvinec since 1989 and at Oleron since 1990. Trials are now being conducted in the Chausey Islands.

Since its accidental introduction in 1971 in the Etang de Thau, on the Mediterranean coast of France, *Undaria pinnatifida* has exhibited a capacity for escaping from its initial site of colonisation and spreading to other areas of the natural environment (Boudouresque *et al.* 1985), as well as having a capacity of reproducing *in situ* (Floc'h *et al.* 1991). As a consequence, there is now no control over the further spread of *U. pinnatifida* from of the original cultivation sites. Moreover, it seems that the sea around Ouessant provides optimal conditions for its development. Thalli reach a length of 2–3 m between September and February (Pérez *et al.* 1988) and the vertical distribution of this alga ranges from + 1 to