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J. Carl Stapleton: Occurrence of *Undaria pinnatifida* (Harvey) Suringar in New Zealand

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In mid-August 1987 attached *wakame*, *Undaria pinnatifida* (Harvey) Suringar (Phaeophyta), growing on a breakwater at Oriental Bay, Wellington, New Zealand (Fig. 1), was identified by Dr. Penny Luckens, a D.S.I.R. (Department of Scientific and Industrial Research) marine biologist. Dr. Luckens had spent 2 years in Japan and had seen *wakame* cultivation, so was easily able to identify the species. An article in the *Evening Post* newspaper, Wellington, September 2, 1987, shows a photograph of Dr. Luckens holding a specimen of *wakame* with holdfast attached to a bottle (Fig. 2).

The *wakame* is growing on rocky surfaces, especially on recently made artificial substrates. The largest population is near the Freyburg swimming pool with other populations between Point Jerningham and the Wellington Overseas Container Terminal (Fig. 1). The species has not been recorded from any other sites in New Zealand.

This occurrence of *wakame* in New Zealand is the first time it has been recorded in the southern hemisphere. It was suggested in the Wellington newspaper articles (*Evening Post*, September 2, 1987; *Dominion*, September 3, 1987) announcing the discovery

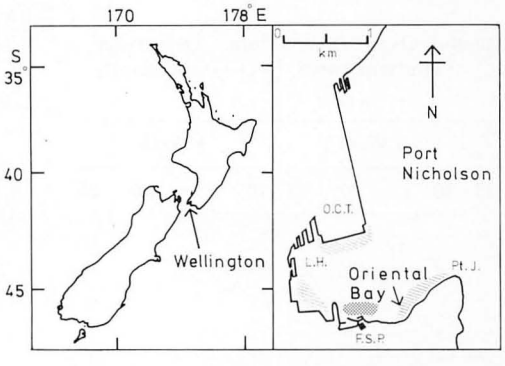

Fig. 1. Map of New Zealand (left) showing location of Wellington. Map of Wellington Harbour area (right) showing the distribution of *wakame*: Light shading at southern end of Overseas Container Terminal (O.C.T.) in Lambton Harbour (L.H). and extending as far as Point Jerningham (Pt. J.) indicates scattered populations of *wakame*. Dark shading near Freyburg Swimming Pool (F.S.P.), location of heaviest population.


NEWS

Asian seaweed invades inner harbour

Breakwater

Too late

Fig. 2. Newspaper article in the "Evening Post" (Wellington), September 2, 1987, with a photograph of Dr. Penny Luckens holding a specimen of *wakame* found in Lambton Harbour, Wellington, New Zealand.

that the species might have arrived in New Zealand as a gametophyte on the hull of Japanese or Korean fishing vessels many of which frequently berth in Lambton Harbour, Wellington. However it seems that it would be difficult for the gametophyte to survive the high temperatures of the tropical seas through which ships from the northern hemisphere must pass to reach New Zealand. Another hypothesis is that the species arrived as a gametophyte in ship ballast water. CARLTON (1985) reviews transoceanic and interoceanic dispersal of coastal marine organisms, including seaweeds, in ship ballast water. However the New Zealand authorities do not know how the species arrived there or for how long it has been growing in and near Lambton Harbour, Wellington. The plants are healthy, fertile and up to 1.5 m long (NELSON, personal communication).

It is too early to know what effect the *wakame* will have on the ecology of the harbour in which it has been found. FARNHAM (1980) discusses accidentally introduced species of seaweeds in British coastal waters and the ecological effects of the introduction of alien species in specific parts of the English coast. Dr. Cameron H. HAY, a D.S.I.R. Oceanographic Institute phycologist, will direct studies of the Wellington *wakame*. It will be necessary to survey the ecology of native seaweeds of Port Nicholson immediately to find out if the *wakame* is growing in any other locations there. The D.S.I.R. is also interested in the commercial potential of the species (HAY, personal communication). There are no plans to remove or destroy the *wakame*.

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Addendum

After submission of the manuscript of this report the paper by HAY and LUCKENS (1987) on the Wellington *wakame* was published.

References

CARLTON, J.T. 1985. Transoceanic and interoceanic dispersal of coastal marine organisms: The biology of ballast water. Oceanogr. Mar. Biol. Ann. Rev. **23**, 313–371.

FARNHAM, W.F. 1980. Studies on aliens in the marine flora of southern England. p. 875–914. *In* J.H. PRICE, D.E.G. IRVINE and W.F. FARNHAM (ed.) The Shore Environment. Vol. 2: Ecosystems. Academic Press, New York.

HAY, C.H. and LUCKENS, P.A. 1987. The Asian kelp *Undaria pinnatifida* (Phaeophyta: Laminariales) found in a New Zealand harbour. New Zealand J. Bot. **25**, 329–332.

スティプルトン J.C.: ニュージーランドのウェリントン港におけるワカメ *Undaria pinnatifida* (HARVEY) SURINGAR の出現

1987年8月中旬，ニュージーランドのウェリントンのオリエンタル湾でワカメが生育しているのが発見された。どのようにしてワカメがニュージーランドへ運ばれたかは，現在のところ不明である。ワカメの生育がこの地域の他の海藻に影響を及ぼしているという情報はまだない。（〒108 東京都港区港南4—5—7 東京水産大学資源育成学科藻類学研究室）