A NOTE ON THE ALGAL BLOOM AT KAWERUA COAST, NORTH ISLAND, NEW ZEALAND

by Pranjit Sarma*

Phytoplankton blooms are not uncommon in the coastal waters of New Zealand. Cassie and Cassie\(^1\) studied the productivity of algal blooms caused mainly by diatoms in the West Coast waters of the North Island during August 1959. The dominant species in the bloom was a form of *Chaetoceros armatum* T. West. Sometimes *Asterionella glacialis* Castracane (formerly called *A. japonica* Cleve) was found to be abundant in the bloom. Among the other associated species, *Aulacodiscus kittoni* Arnott was encountered in a few samples, but was of rare occurrence.

During the Scientific Camp organised by the Auckland University Field Club (11-17 May, 1974) at Kawerua (West Coast) near the Waipoua Kauri Forest, a bloom was observed in the coastal water at about 10 a.m. on the 14th of May. On the way south from the Field Club Hut towards Maunganui Bluff, a brown scum was found to cover about 500 metres of the sandy beach, and was present in the surf, north of the Waipoua River. After about 100m of clean beach, the same brown scum was again encountered and found to cover the beach for another few hundred metres. Samples of this scum were collected from the beach. On the way back at about 3 p.m. the same day, it was amazing that no trace of the bloom could be found on the beach. It had all disappeared!

The beach sample, on preservation in F.A.A. (Form-acetic-alcohol) immediately turned greenish in colour. Microscopic examination revealed only two species of Centric diatoms (without any other associated phyto- or zooplankton). The bloom was overwhelmingly dominated by a beautiful diatom: *Aulacodiscus kittoni* Arnott (Figs 1-4). This species was previously recorded by Cassie\(^2\) (p.12) from the West Coast (Muriwai Beach during early September, Waitarare Beach during early January, April and August). Other published records include the Bay of Islands\(^4\), Manukau Harbour\(^8\) (p.216) and Pakiri Beach\(^5\) (p.158). Besides these, it has been found together with *Chaetoceros armatum* T. West at many beaches on the West Coast from the Manukau Heads to Hokianga, and also on several East Coast beaches from Cape Karikari to the Whangaparaoa Peninsula, though it was usually not as abundant as *C. armatum* (Taylor, unpublished). Lewin and Norris\(^3\) (p.143) recorded both species from Dargaville Beach. *Aulacodiscus kittoni* is also known from Sumatra and Java\(^7\) (p.35) and from the Pacific Coast of North America\(^3\) (p.143).\(^6\) The only other associated species in the Kawerua bloom was a form of *Chaetoceros armatum*. This particular alga was at first considered by Cassie and Cassie\(^1\), and Cassie\(^2\) to be a new species although it was previously assigned to *C. armatum* by Wood, Crosby and Cassie\(^8\). Lewin and Norris\(^3\) and Taylor\(^5\) are agreed that it should be called *C. armatum*. This species was recorded by Cassie\(^2\) (p.12) from the West Coast of the North Island (Muriwai Beach during early January, February, April,

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Figs. 1-4. Scanning electronmicrographs of *Aulacodiscus kittoni* Arnott.
Fig. 1 (top). Valve- and girdle-views x 600.
Fig. 2 (bottom). Valve-view x 800.
Fig. 3 (top). Valve- and girdle-views x 600.
Fig. 4 (bottom). Portion enlarged to show ornamentation x 2000.
June and August), and from the East Coast (Moeraki — near Dunedin — during early September) and the South Coast of the South Island (Oreti Beach — near Invercargill — during early October). Wood, Crosby and Cassie\(^8\) noted that it is the characteristic diatom of the West Coast beaches where it forms the main food of *Paphies (Mesoderma) ventricosa* Gray 1843 (toheroa). It also occurs on surf beaches on the East Coast of the North Island, and at least as far south as the Hauraki gulf (Taylor, unpubl.). From the above records it appears that this species has a wider distribution than *Aulacodiscus kittoni*, which Cassie\(^2\) regards as characteristic of the West Auckland Current Zone.

Populations of *C. armatum* and *A. kittoni* are present in the West Coast surf beaches throughout the year but are more abundant in winter months.\(^1\) It appears that at the West Coast the water gets thoroughly mixed due to turbulence of the sea and possibly a uniform temperature is reached which may be partly responsible for the production of bloom.

**SUMMARY**

An algal bloom caused by two species of Centric diatoms is recorded from the coastal waters off Kawerua, North Island of New Zealand. The overwhelmingly dominant species in the bloom was *Aulacodiscus kittoni* Arnott and the only other associated species was *Chaetoceros armatum* T. West.

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