greater WELLINGTON
REGIONAL COUNCIL

Report **06.624**
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Committee **Environment Committee**
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Contaminants in shellfish flesh

1. Purpose

To present the key findings of an investigation into faecal bacteria and trace metal concentrations in shellfish from selected locations in the Wellington region.

2. Significance of the decision

The matters for decision in this report do not trigger the significance policy of the Council or otherwise trigger Section 76(3)(b) of the Local Government Act 2002.

3. Background

In 2001-2002 Greater Wellington assessed contaminant levels in shellfish for the purpose of:

- assessing the use of shellfish monitoring for measuring marine and estuarine water quality with respect to low-level contaminants that are not practical to measure routinely as part of an ambient water quality programme;

- providing a baseline for identifying spatial patterns of contamination, and measuring trends over time in contaminant levels, should a sentinel shellfish monitoring programme be established in the region;

- contributing to regional information on the movement of chemical contaminants into marine food chains; and

- assessing the risks to human health resulting from the collection and consumption of feral shellfish from the region.

The 2001-2002 study was linked to Greater Wellington's stormwater investigations programme, in which the same suite of chemical contaminants was analysed in stormwater discharges from a variety of urban catchments.

The 2006 investigation was smaller in scope than the original investigation (see Report 03.208, 14 April 2003), focusing on sites in the western Wellington region and the contaminants considered to pose the greatest risk to public health; microbiological contaminants and trace metals.

4. Sampling sites and methods

Shellfish sampling was undertaken during February-March 2006 in accordance with a Special Permit from the Ministry of Fisheries. Three species of filter-feeding shellfish were collected from the following locations:

- Kapiti Coast (3 sites) – tuatua (*Paphies subtriangulata*);
- Porirua Harbour (5 sites) – cockle (*Austrovenus stutchburyi*); and
- Wellington Harbour (12 sites) – blue mussel (*Mytilus galloprovincialis*)

Three replicate samples were collected from each sampling site (Figure 1) and analysed for faecal coliform indicator bacteria and trace metals. Measurements of shellfish size (length) were made at the time of collection.

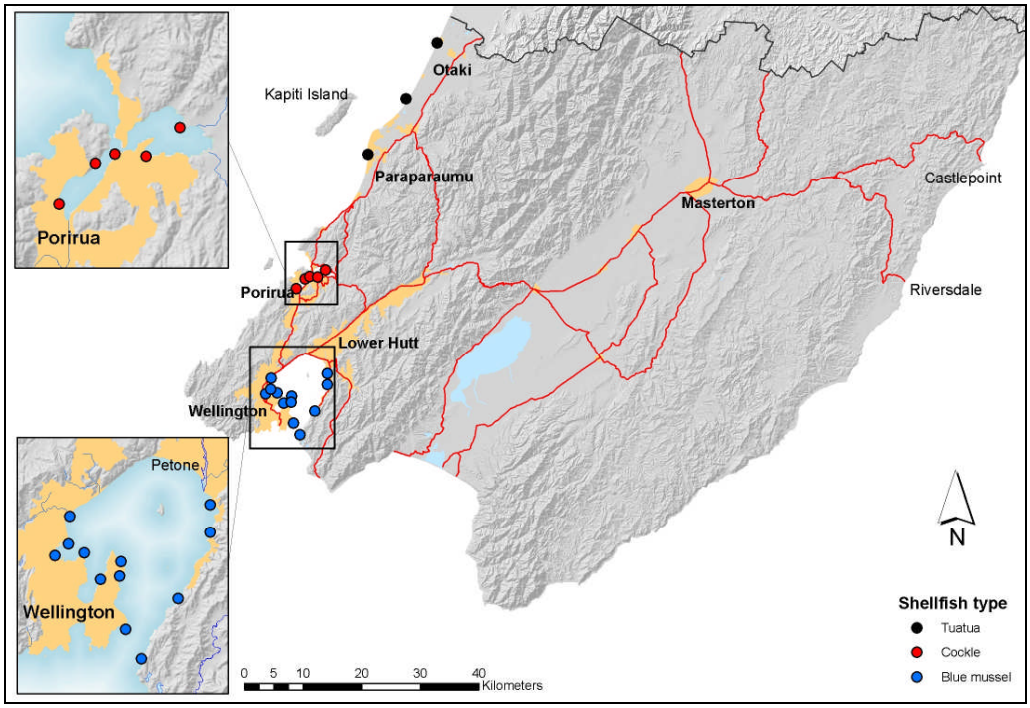

Figure 1: Location of shellfish sampling sites

5. Findings

Faecal coliform indicator bacteria were not detected in many samples of the three species of shellfish examined. No samples had bacteria present at a concentration that exceeded recommended microbiological guidelines for edible tissue.

Cadmium, chromium, copper, lead, mercury, nickel and zinc were all present in the three species of shellfish examined. However, none of these metals were present in any shellfish sample at a concentration that exceeded the national

food standards for edible tissue. There are no published guidelines for acceptable concentrations of chromium, nickel or zinc in shellfish tissue.

The tuatua and cockle sample results showed little spatial variation in average metal concentrations, with similar concentrations recorded between most sampling sites. However, there was some variation in metal concentrations in the mussel samples from Wellington Harbour. Samples collected near Frank Kitts Park and the Thorndon Container Wharf in the inner harbour generally recorded the highest concentrations (Figure 2), while samples collected from Mahanga Bay, Shark Bay and Sunshine Bay consistently recorded the lowest concentrations. Higher (on average) metal concentrations in the inner harbour may reflect the influence of urban runoff, although mussels from Inconstant Point on the south eastern side of the harbour also recorded high concentrations of some metals relative to other sites. Differences in mussel size between some sampling sites also make inter-site comparisons difficult, particularly for mercury and nickel. These metals showed a reasonably strong negative correlation with shellfish size (i.e., average concentrations decrease with increasing size).

Direct comparisons with the results of the 2001-2002 investigation are difficult but, generally speaking, the metal concentrations in shellfish flesh observed in 2006 were higher than those reported in the earlier investigation. The key exceptions are mercury and lead; average concentrations of these metals were lower in all three shellfish species in 2006.

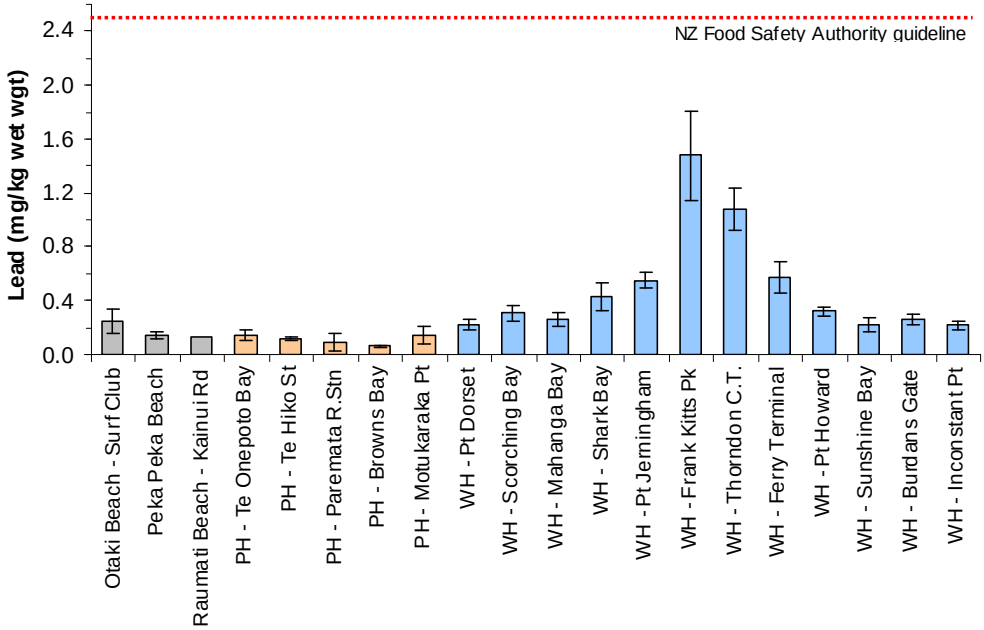

Figure 2: Lead concentrations (average +/- 1 std dev) in shellfish collected from various locations in the western Wellington region

6. Future monitoring requirements

Shellfish monitoring requirements are to be reviewed this financial year along with other aspects of coastal monitoring undertaken by Greater Wellington. At this stage it is considered that contaminant levels in shellfish flesh should be

examined periodically where popular shellfish gathering areas are located in close proximity to urban areas.

7. Communication

A technical report, *Contaminants in shellfish flesh - an investigation into microbiological and trace metal contamination in shellfish from selected locations in the Wellington region*, has been prepared and copies will be sent to the relevant territorial authorities in the region and to Regional Public Health. The report will also be made available to the public on Greater Wellington's website.

8. Recommendations

It is recommended that the Committee:

1. ***Receive** the report; and*

2. ***Note** the contents*.

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