The value of beach cast seaweed to the marine specie using yellow eyed mullet as an example

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For:
MAF Biosecurity NZ
Ministry of Fisheries

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- **This presentation forms part of the WRMFA submission to Biosecurity New Zealand**

- **Review of the Undaria Commercial Harvest Policy discussion paper No: 2009/02**

- **Also: Mfish Initial Position Paper October 2009-10 fishing year.**

- **Proposal to expand areas where commercial harvesting of beach cast seaweed is permitted both in the North and South Islands**

- **The submission opposes both proposals**

- **Introduction**

  My expertise is the understanding of the intertidal zone and near shore waters of the region to marine specie.

  While this presentation has been based around my discoveries relating to the food and spawning of yellow eyed mullet in the Makara Estuary, the study could have been made in any other estuary in New Zealand as this specie is found nationwide.

  The study could also have been made on any one of the other marine specie that travel into fresh water.

  There are no records describing that this study has been done before

- **The importance of yellow eyed mullet in the marine food chain has been underestimated as they have been found in the gut of many marine specie including Hector dolphins.**

For years the intertidal zone has been called wastelands and councils today still continue to destroy them without any knowledge of their value to marine specie.

Now we find both MAF and Mfish do not know the value of beach cast seaweed to marine specie

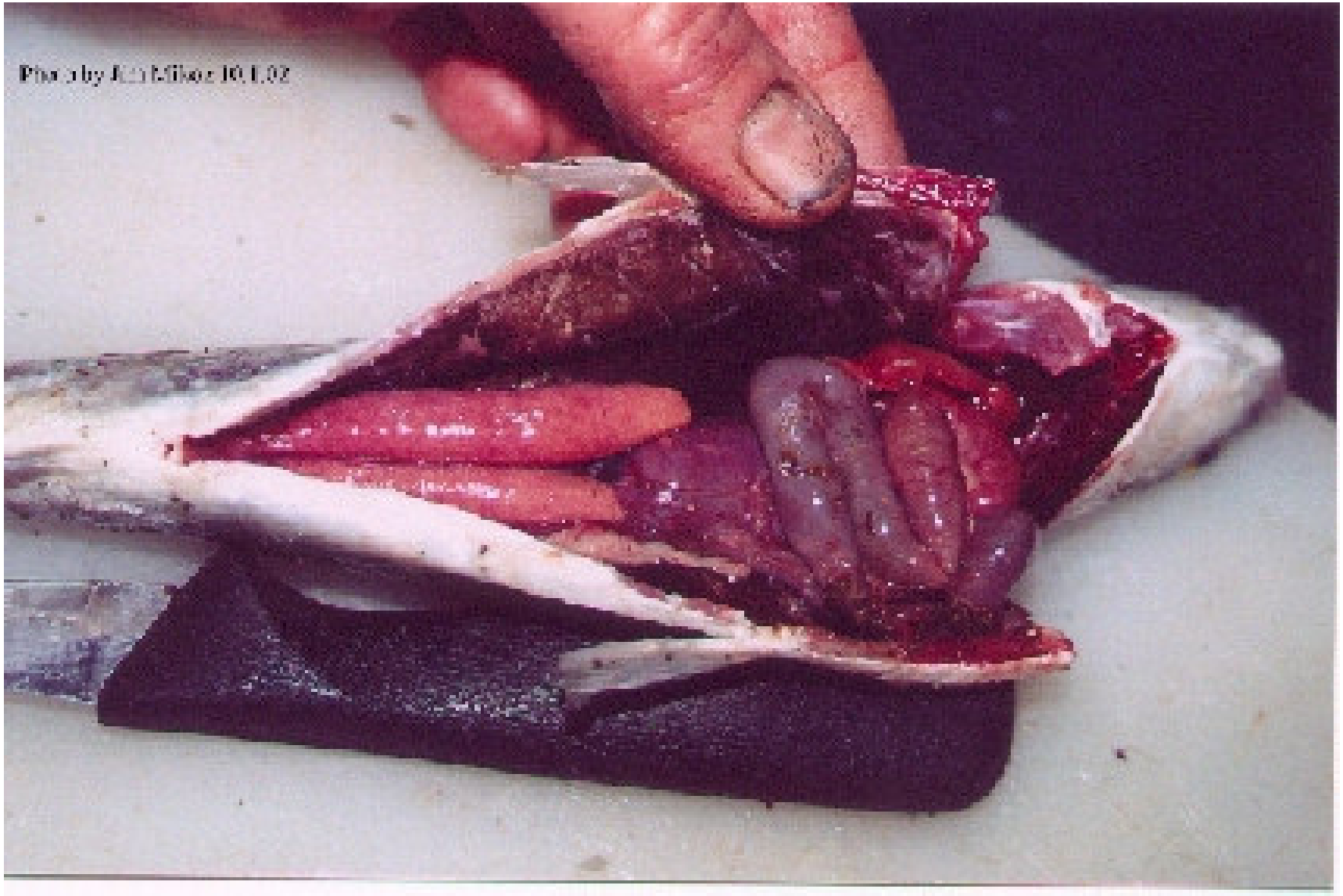
The life found in beach cast seaweed at the mouth of the Makara Stream provides a major food source for many marine specie.

Clean beach cast seaweed at the outlet of the Makara Stream

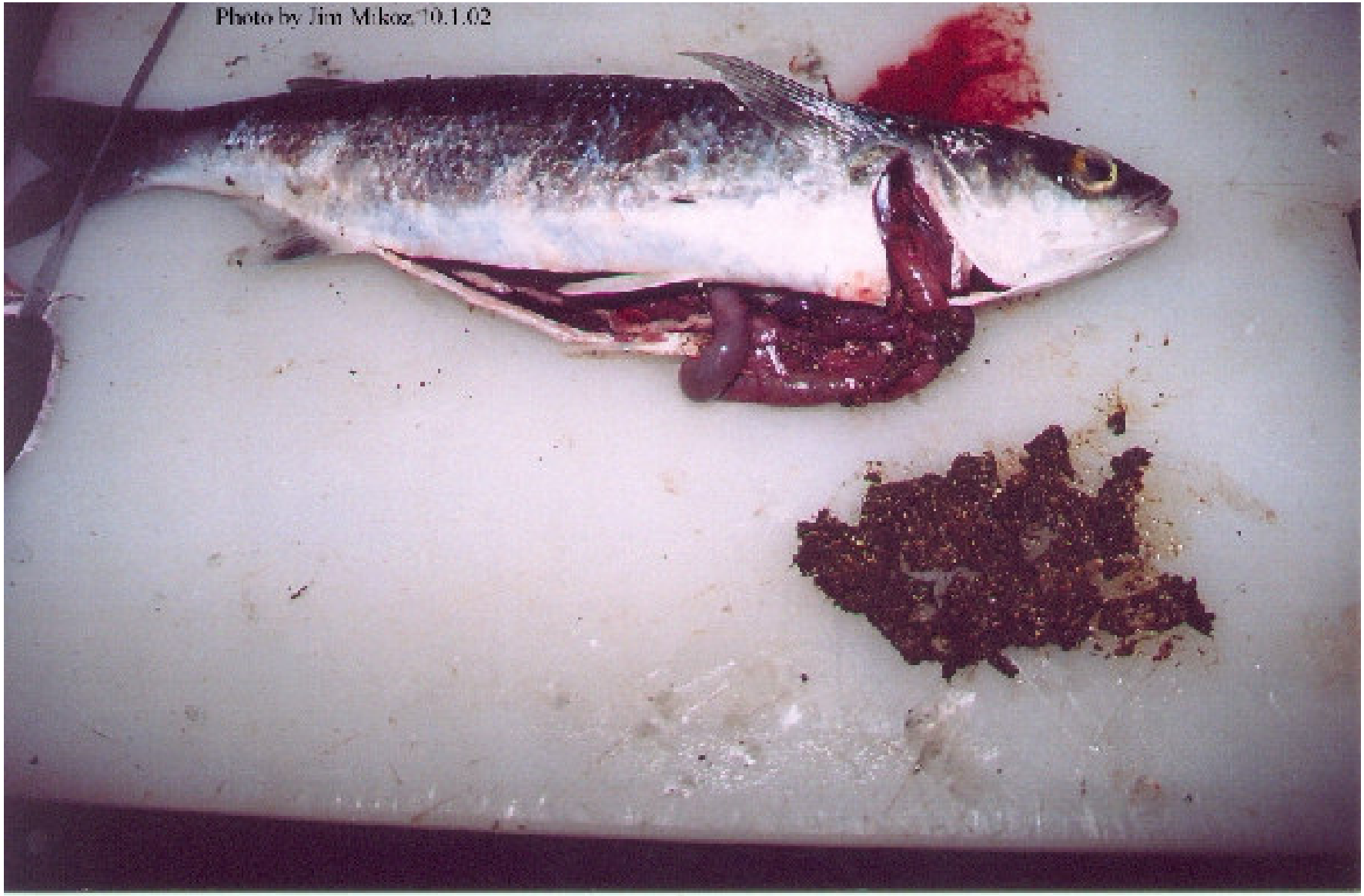
The value of beach cast seaweed to the marine specie yellow eyed mullet:

Food source - Sand hoppers

Yellow eyed mullet with decomposing sand hoppers



Gut contents. Note they do not eat mud. Yellow eyed mullet 270mm long



Gut full of sand hoppers that live in beach cast seaweed

Sand hoppers being collected at Te Papa for their collection

Sand hoppers being collected

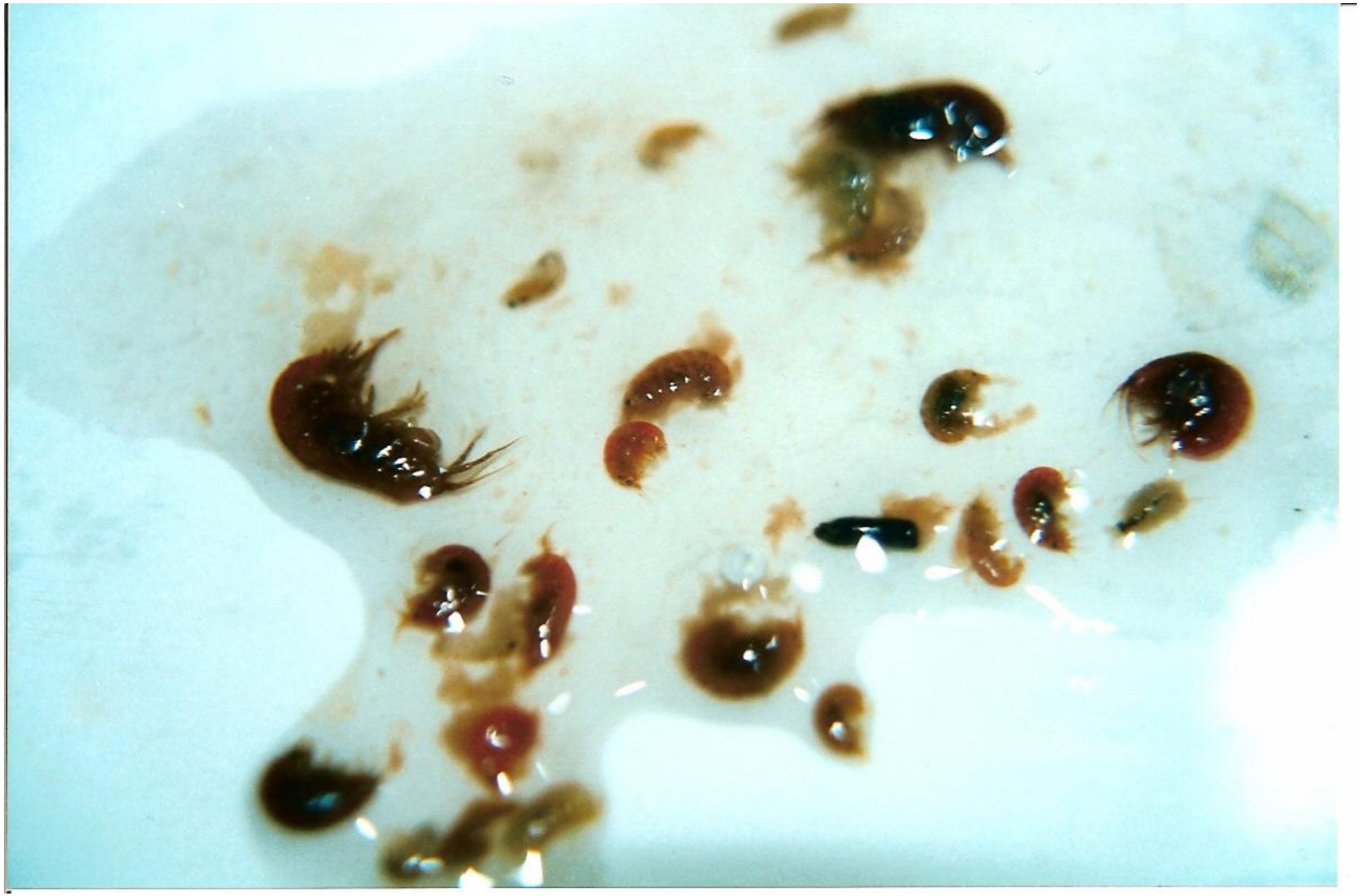
Sample of sand hoppers from 12 yellow eyed mullet

Yellow eyed mullet do not eat mud or silt when gathering their food

Science has never captured sand hoppers from a fish gut before. Note they do not eat mud.

Sand hoppers now held at Te Papa

Sand hoppers. There are 150 different specie of sand hoppers. As they had never been collected from a fish gut before it is expected that there will now be more specie

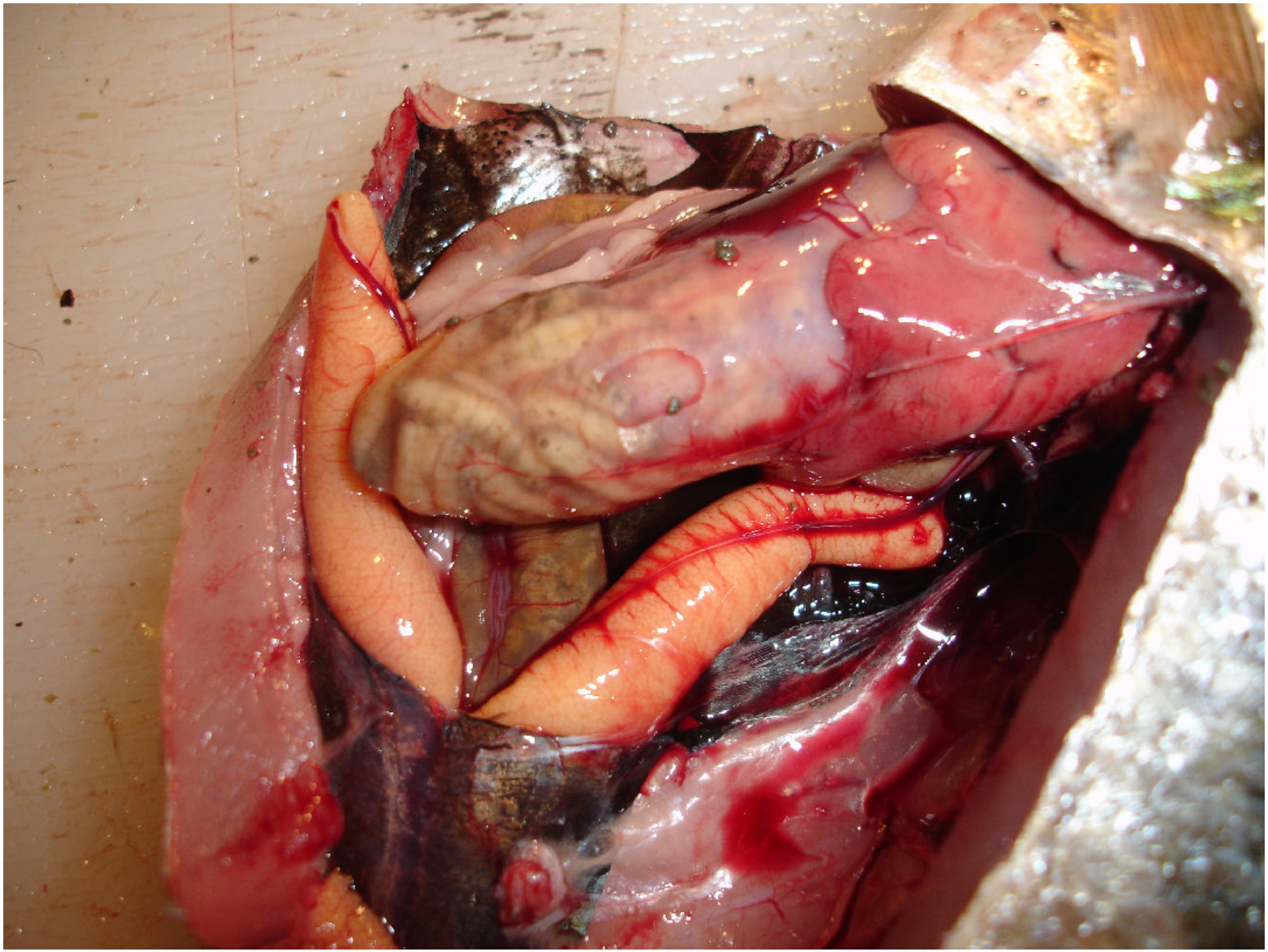


The value of beach cast seaweed to the marine specie yellow eyed mullet:

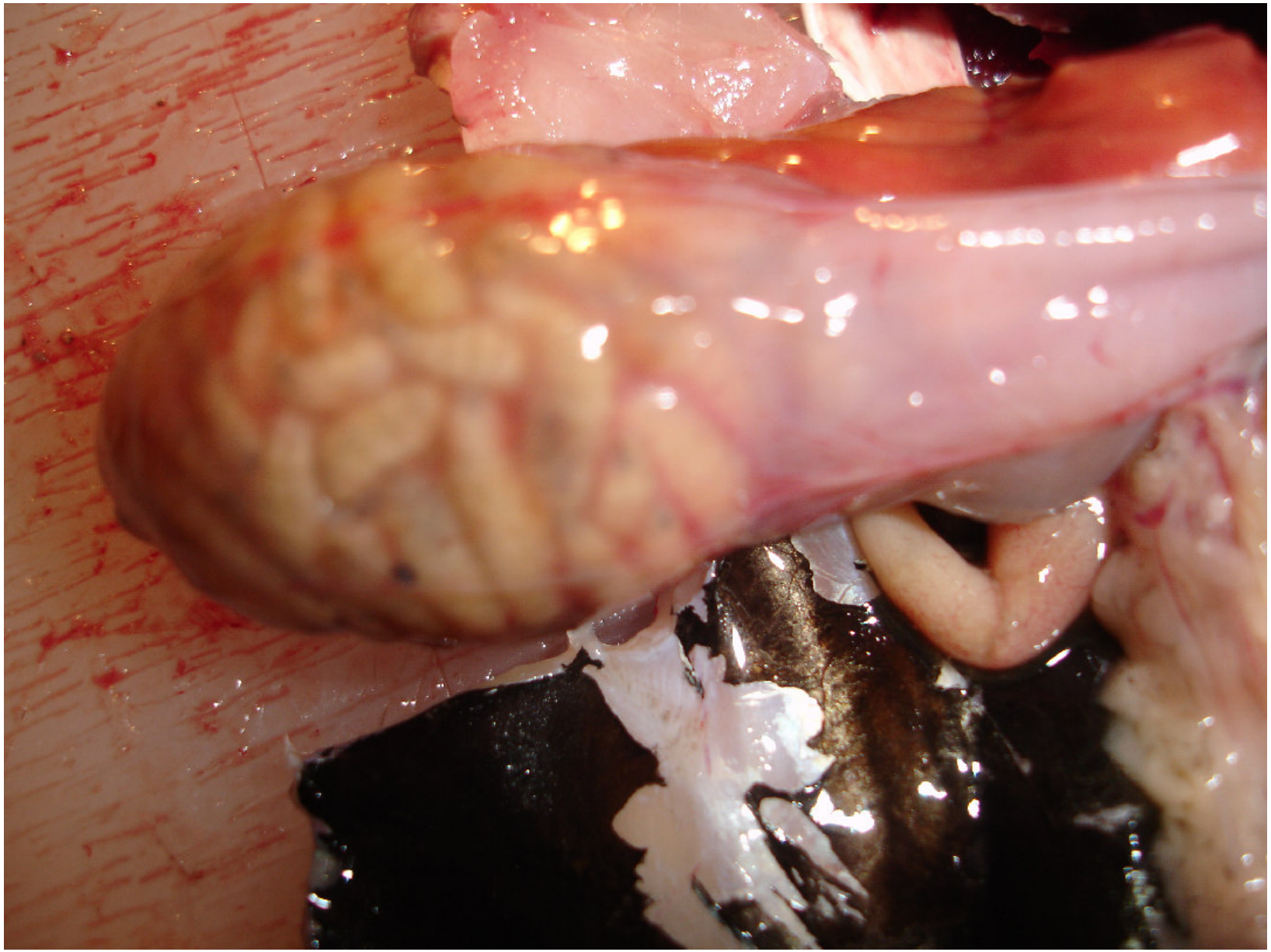
Food source - Kelp flies

A full gut of kelp fly maggots.

Another with a gut full of kelp fly maggots

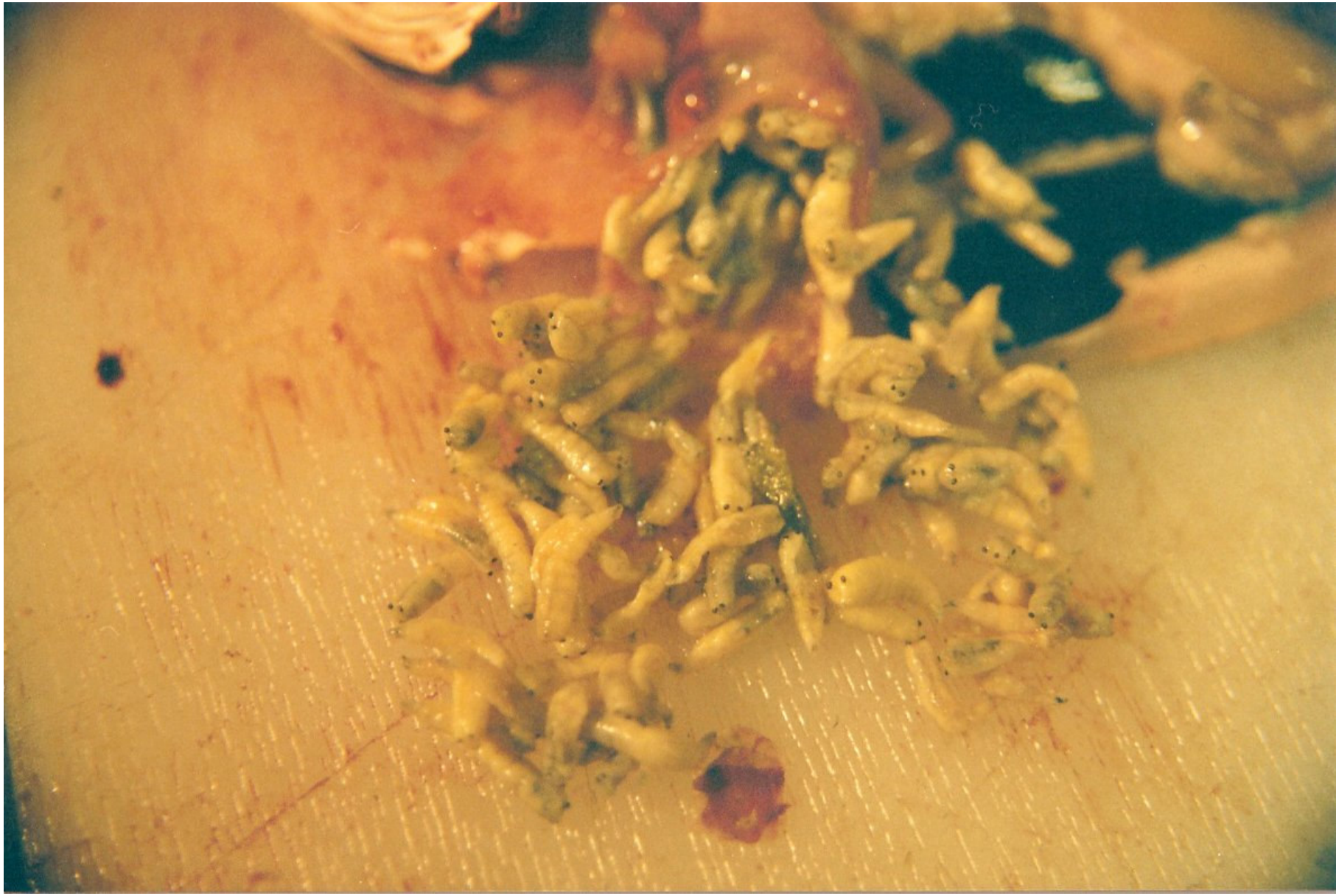


Kelp fly maggots provide the protein for their spawning



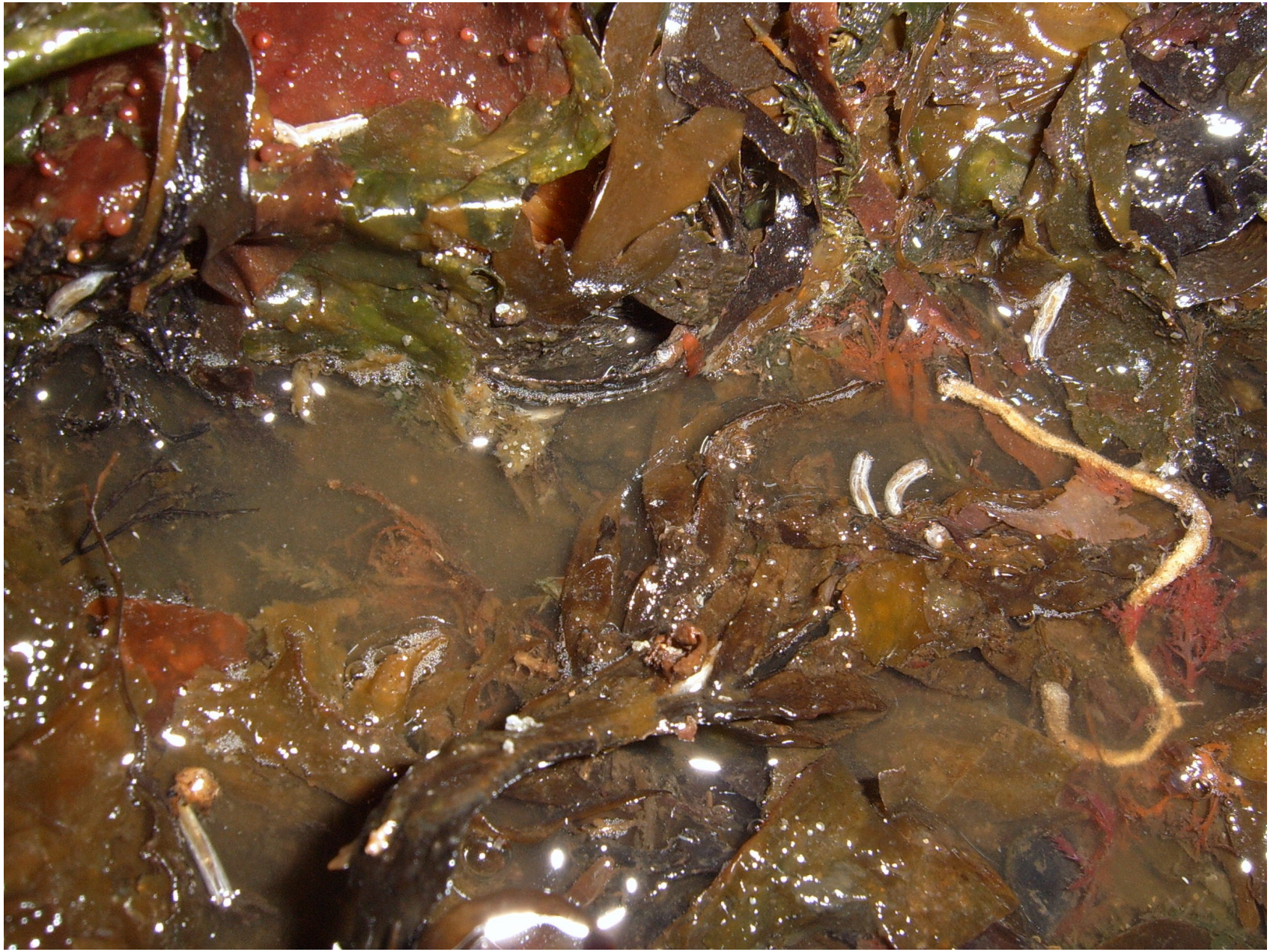
Gut exposed showing kelp fly maggots. Note they do not eat mud.

Gut exposed showing kelp fly maggots



Kelp fly maggots are found only in green beach cast seaweed.

Kelp fly and sand hopper larvae in beach cast seaweed. Makara Beach



The value of a clean intertidal zone to the marine specie yellow eyed mullet:

Food source - Algae

The importance of algae. A school of yellow eyed mullet can be seen feeding on algae, top left

Algae grows in the intertidal zone and is the food source of yellow eyed mullet

Algae in the gut of a yellow eyed mullet. Note there is no mud in the gut.

Algae taken from the gut of a yellow eyed mullet. Sample is at Te Papa. Note no mud.

Algae taken from the gut of a yellow eyed mullet.

The value of a clean intertidal zone to the marine specie yellow eyed mullet:

Food source - Mysid shrimps

Five mysid shrimps found with what could be glasswort in the gut. Note there is no mud.

Mysid shrimp

Mysid shrimps found in the gut of a yellow eyed mullet

The value of a clean intertidal zone to the marine specie yellow eyed mullet:

Food source - Salps

Gut full of salps

More salps

Salps eat fish eggs and they in turn provide a food source to yellow eyed mullet

Salps also eat fish eggs. Yellow eyed mullet keep the ocean in balance. There are many species of salps

Impacts on the marine specie yellow eyed mullet:

The removal of beachcast seaweed

- **Forty two councils remove seaweed.**
- **Twenty nine beaches are groomed in Wellington**
- **An industry is being developed to harvest beachcast seaweed without any research into its value to marine specie.**

Seaweed on the Makara Beach supports intertidal marine life

Beach cast seaweed on Petone Beach was removed every three days until the Hutt City Council staff read my stories in the NZ Fishing Coast to Coast magazine and now a new management plan has been made

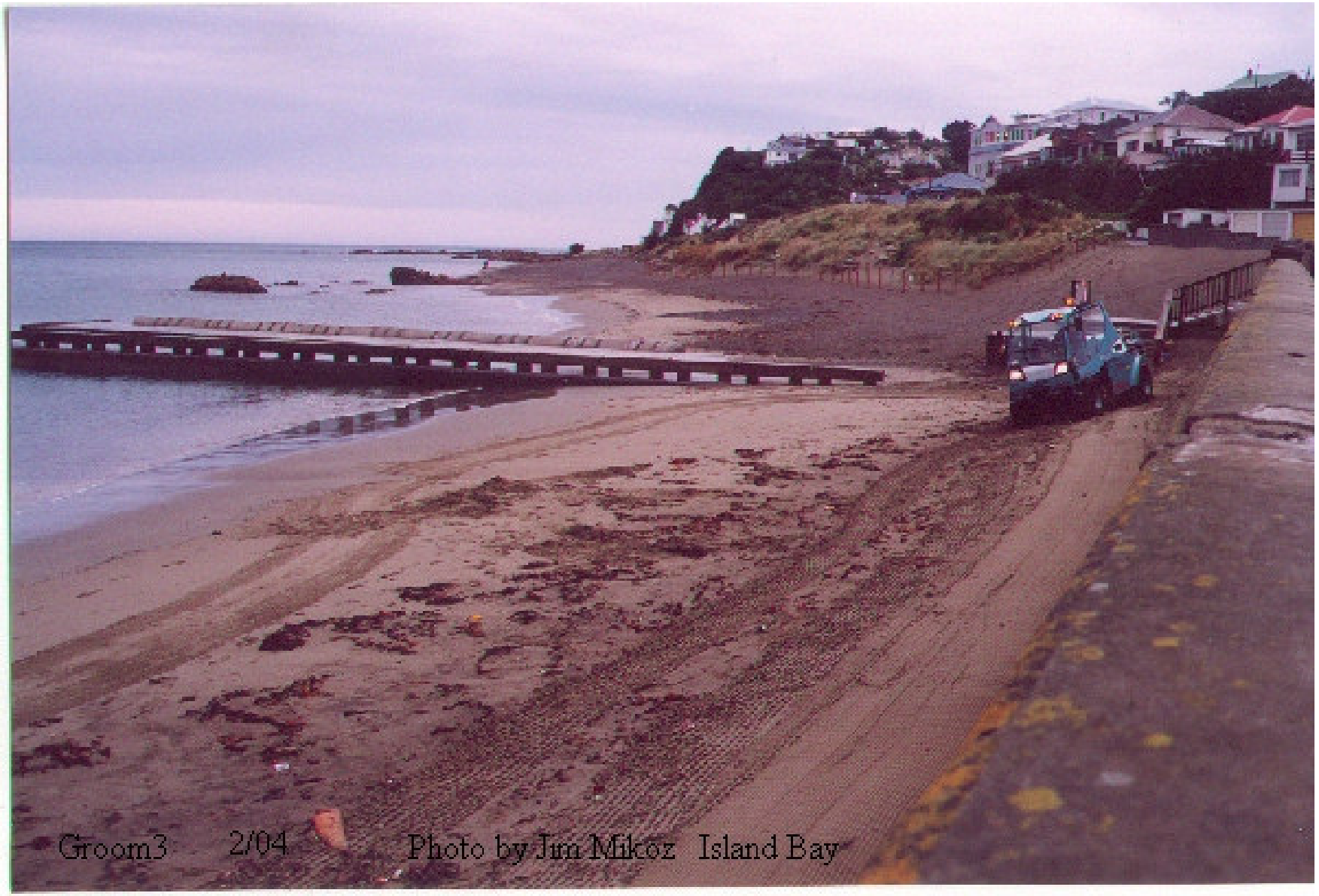
Birds arrive to eat the sand hoppers and kelp fly maggots as the tide comes in. Under the water fish arrive also. Petone Beach

Another day of beach grooming on Petone Beach. 11.04 Machinery destroys the ecosystems that live in sand. Should every beach in NZ look like this? If so the impact on marine specie stocks will be massive.

What life remains is crushed to death. There are few yellow eyed mullet in Wellington Harbour now

The holes where sand hoppers live in sand will not support the weight of a loader

Destroying the marine food source cannot occur in any marine reserve



With 48 two metre tidal waves a day, the beach cast seaweed was lost off the beaches due through these ships destroying a major food source for yellow eyed mullet and blue cod. Mfish has failed to protect the blue cod food source and has today still fails to comply with the Fisheries Act.

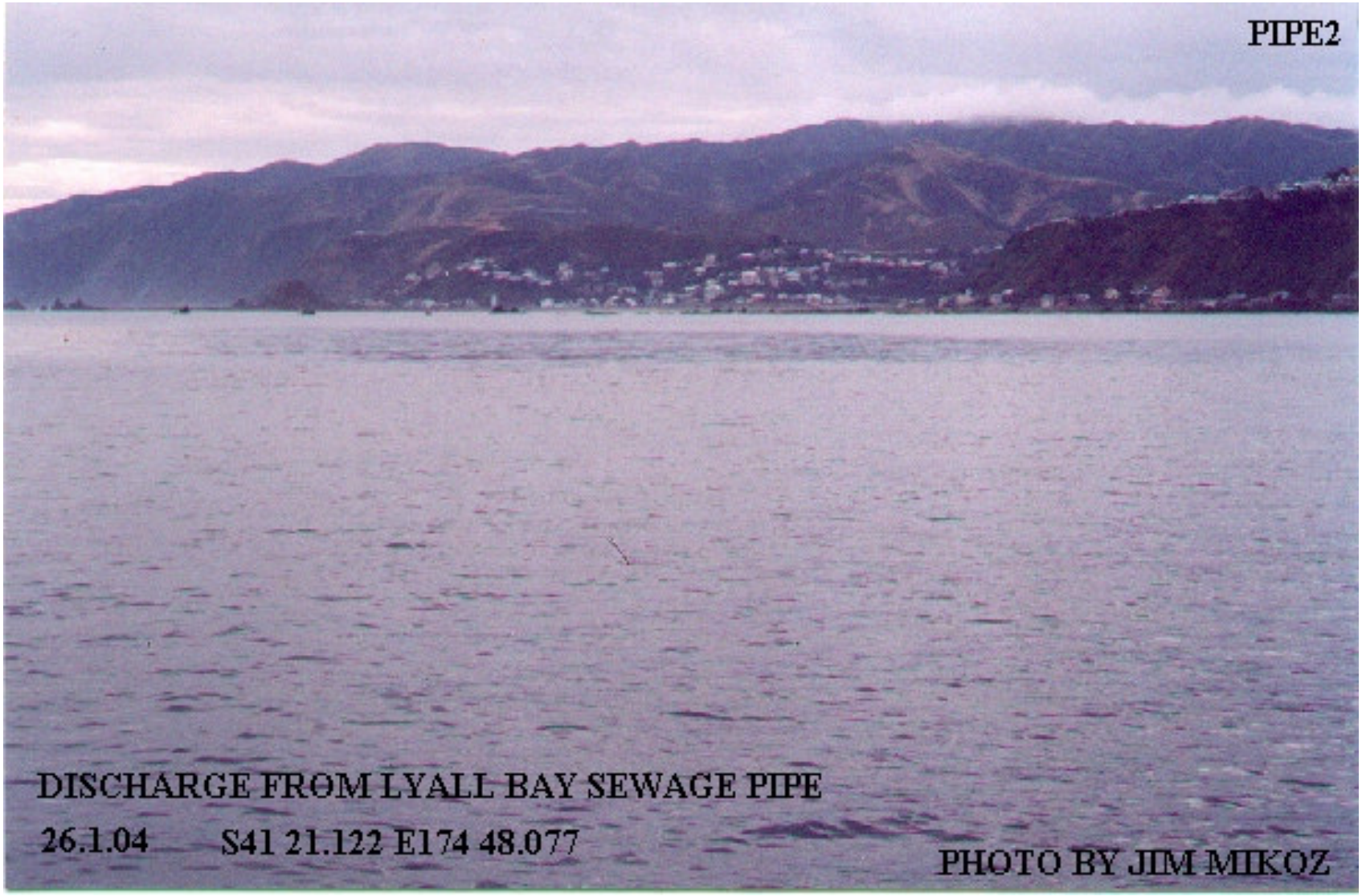
- **Contaminated fresh water travels on the surface of the sea for many miles.**

- **Whether the waste water flows down a river or stream the impacts are obvious on marine ecosystems.**

- **Seaweed absorbs chemicals and is eaten by fish.**

- **We eat fish, dolphins eat a lot more fish than us and Hector dolphins are disappearing a lot faster than the one or two caught in a net. Think about it.**

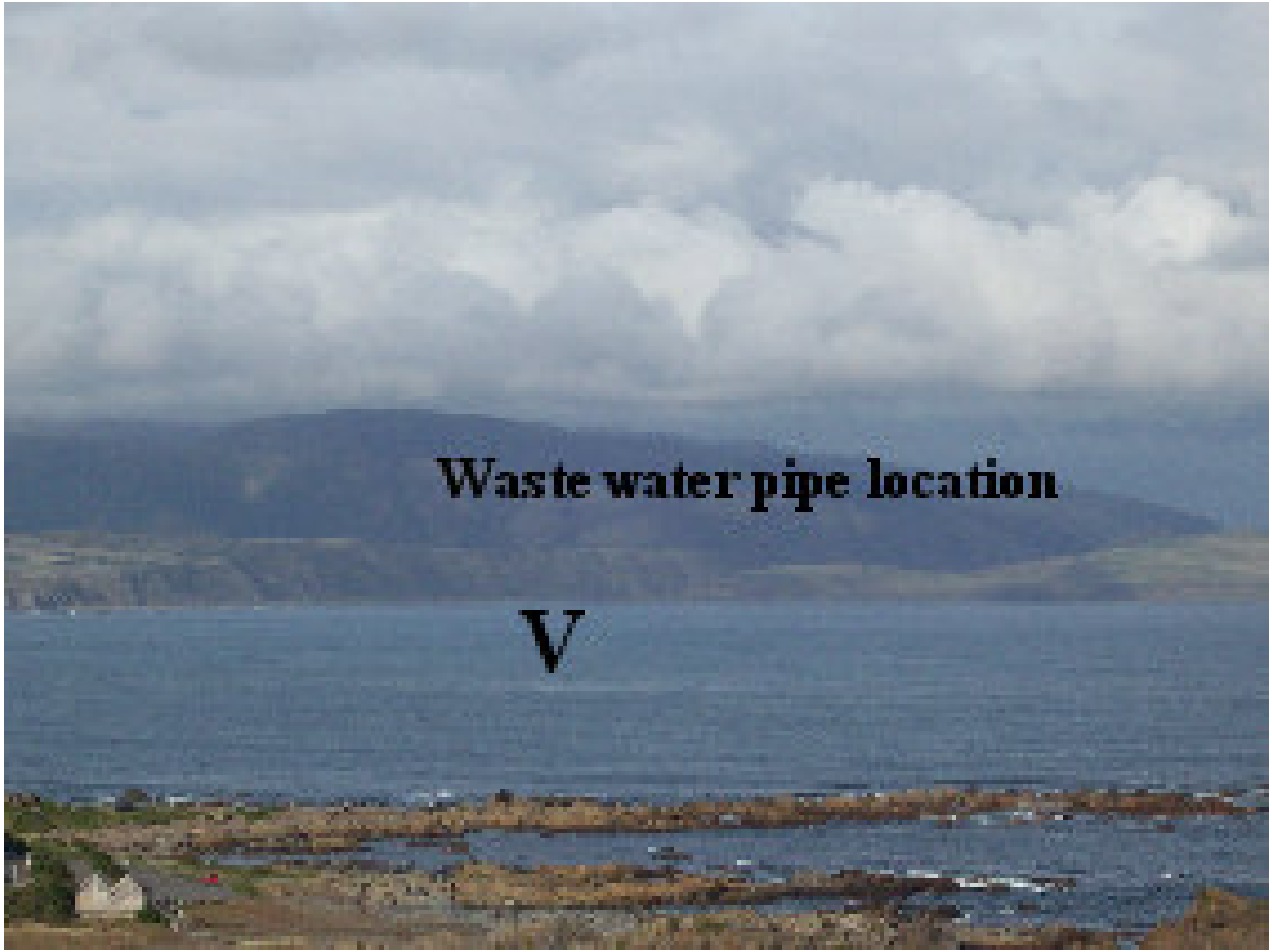
From a boat the oily chemical slick from the WCC waste water pipe in Lyall Bay can be seen spreading into the bay and contaminating rock pools and beach cast seaweed .



From the hills the surface slick from the WCC waste water outfall. The impact on marine life is massive from these surface slicks of chemicals.

Another day another discharge

Location of the WCC waste water pipe in Lyall Bay sees the product of chemicals sweeping through the marine reserve every day



Red gurnard spawn in Lyall Bay then their eggs rise to the surface to be contaminated by the chemicals from the WCC waste water

Surface flowing waste water is full of human diseases, petroleum, and endocrine chemicals that kill algae. A major food source for fish.

The emergency pipe flows six times a year but it would take years to restock the rocks with marine life from one flow. Chemicals are used to kill algae and NZ spends more on these chemicals than the whole conservation budget

Rock pools next to the WCC emergency waste water pipe are dead. Nothing lives. Almost every city and town discharges waste water into a river or harbour. The impact on marine life is massive

Where there is no waste water there is plenty of rock pool life. Makara

Gathering sea lettuce with the waste water pipe in the back ground and the main outlet 500 metres away

Beachcast seaweed on Tarakena Bay beach has been burnt black with chemicals. It will not support life.

Island Bay beach with black seaweed from the chemicals coming out of the Lyall Bay waste pipe. This beach is closed when it rains and WCC Lyall Bay waste water outlet flow exceeds the plants capacity

There is no waste water pipe at Island Bay the pollution came from the Lyall Bay sewage pipe.

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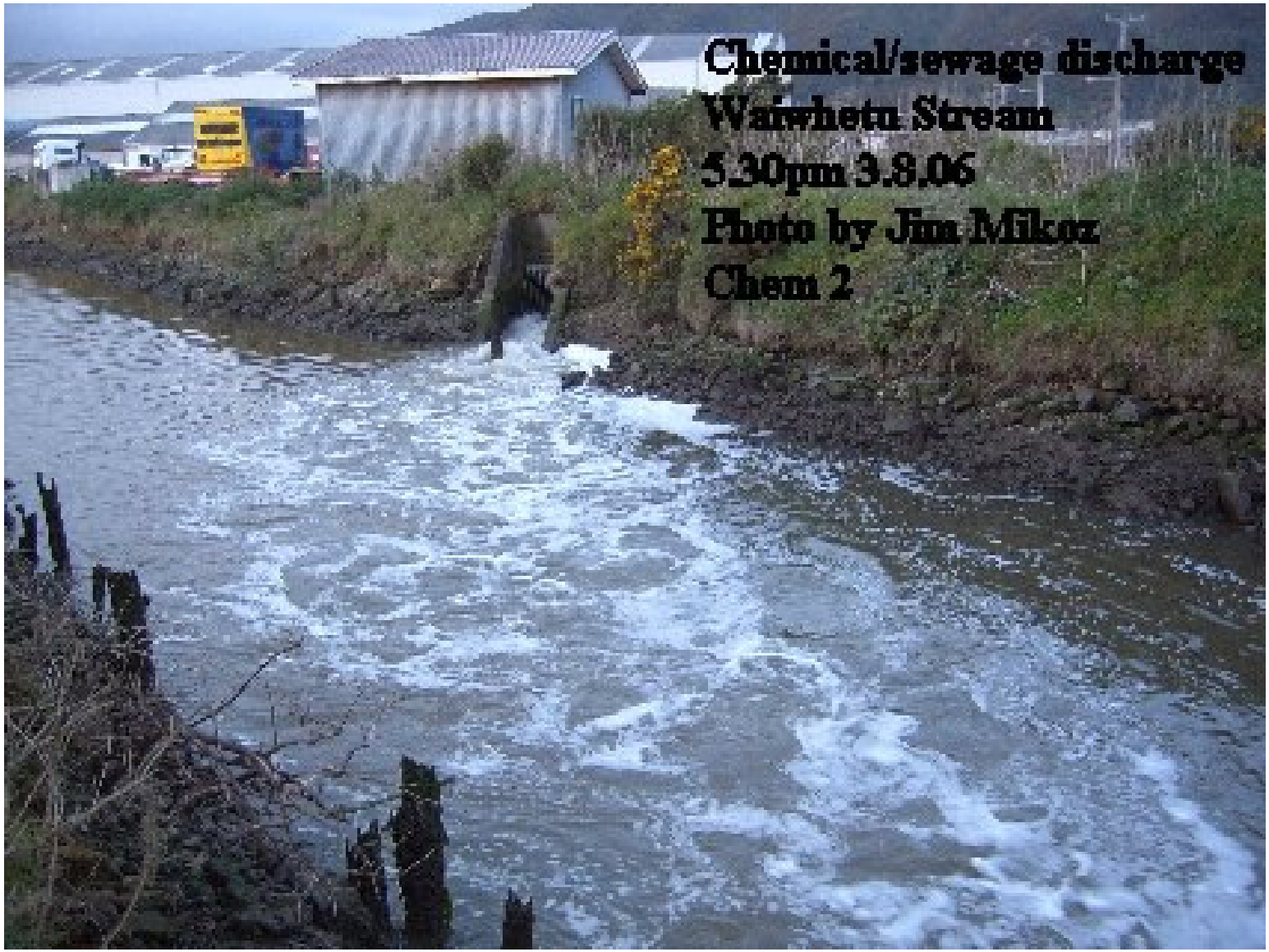
Seaside sewage warning

■ People have been warned to stay clear of Wellington's Island Bay beach, where sewage has flowed into the sea after heavy rain in the past week. Wellington City Council erected warning signs yesterday urging people to avoid the seawater in the area till further notice. Regional Public Health medical officer Stephen Palmer said those who swam or dived in the water ran the risk of gastric illnesses that could be life-threatening.

Dolphins approaching Island Bay splash the surface waters to keep bait fish together

Dolphins veering out to sea approaching the waste water flowing in their direction from Lyall Bay

Waste water flows into the Waiwhetu Stream from the Hutt City Council emergency pipe on average four weeks a year. This year it flowed from March to July



Waste water flowing into the Waiwhetu Stream from the Hutt City Council emergency pipe turning intertidal life dead and black

As a result the algae turns black and dies off for a years and shellfish and seaweed further out becomes contaminated and dies.

Normally the Hutt City waste water dumps on this beach adjacent to Pencarrow. Note the beach cast seaweed is black due to chemicals

The few clumps of seaweed that arrive are burnt black and dry with chemicals.

The waste water from Pencarrow seen covering the whole of Fitzroy Bay contaminating beach cast seaweed in all directions.