

Helping New Zealanders learn more about grey mullet

Maren Preuss



Brendan Hicks

NIWA is asking for your help in getting to know a modest star of New Zealand ecology.

We are researching how a native species, grey mullet, use different habitats during their lives.

This project will benefit from your input, and lead to important new knowledge about our native species. This information is more than any one science survey can discover, so we would like your help.

Below is some information on the species and where you are likely to see them. Then a short and simple questionnaire survey form will collate what you had seen and contribute to a better understanding for the benefit of all New Zealanders.

Maren Preuss

Grey mullet

Grey mullet (*Mugil cephalus*) is a cosmopolitan species found around the world.

Genetic data suggests that 14 'cryptic' species exist, and in New Zealand, grey mullet support important commercial, recreational and customary fisheries with about 800 tonnes of grey mullet commercially landed each year, mainly in the upper North Island. However, grey mullet are found all round the North Island, and across the top of the South Island, with occasional reports from as far south as the Waimakariri River, near Christchurch.

Current evidence suggests that all juveniles start off in estuarine nursery habitats. With increasing size and age they disperse widely across estuaries, freshwater systems such as lakes and rivers, off exposed surf beaches, and around coastal bays and islands, including many sheltered shallow-water reefs.

Seasonal migrations in and out of freshwater systems are likely, and grey mullet may also make seasonal north-south migrations, no southern nursery grounds have been discovered. The only known nursery habitats are in the northern North Island. Spawning is thought to occur only at sea, and so spawning migrations must also occur, though not all fish may necessarily migrate every year.

To add to this complex life history, some populations can become trapped in lake systems where access to the sea is cut off for a

number of years, producing fish bigger than 4 kilograms.

We would like to learn more about the seasonal distribution and abundance of grey mullet around New Zealand, especially in the more southern part of its range, and in freshwater systems.

We are using otolith (ear-bone) chemistry to reconstruct lifetime environmental histories of individual fish (using elemental markers for marine, brackish, and freshwater environments), along with genetics to learn more about what/if different populations exist.

You can help us with this research by providing your observations of grey mullet.

Please fill in the survey form, using Google Maps/Earth or a local map, to tell us where (and when) you saw grey mullet. You can ring us to directly if you prefer. Knowledge of where they were not seen is equally valuable. For instance, if you live in the South Island and spend a lot of time in/on the water, but have never observed grey mullet, that also is valuable information – absence data helps us determine where the grey mullet's distributional range ends. Collectively, this information will allow us to significantly improve our understanding of this intriguing and wide-ranging species.

Do you have any pictures or other archival material about grey mullet?

We would like to gather any historical accounts of fishing or unusual records of these species; these could be things like personal natural history diaries, photographic records, or fishing logs. Photographs would be especially useful.

Please ring or email for further information

Mark Morrison

09 375 2063

mark.morrison@niwa.co.nz

NIWA Head Office, 41 Market Place, Auckland Central

09 375 2050

For more information

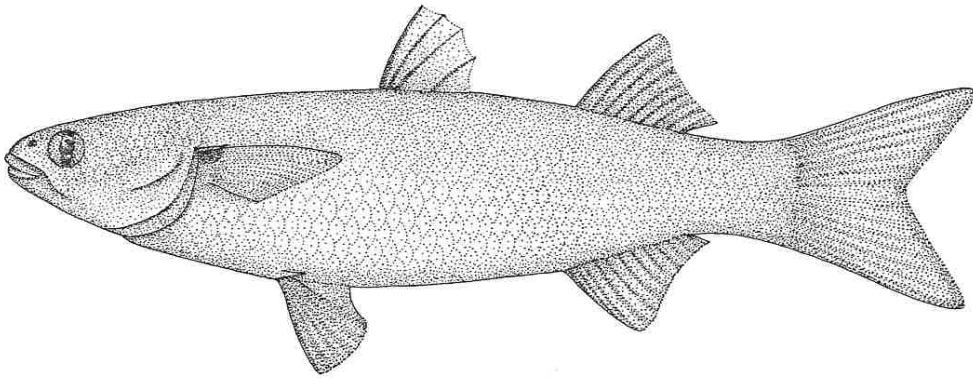
For more information on grey mullet, you can download a MPI review report which covers the known life history of this and 38 other coastal New Zealand fisheries species, at: <https://www.mpi.govt.nz/document-vault/4353> (Habitats and areas of particular significance for coastal finfish fisheries management in New Zealand).

Results of this current research will be available on www.niwa.co.nz. This will include us posting detailed summary maps of where people report these species from. If you wish to receive a copy of the final reports/papers when they become available, please provide contact details on the survey form.

This research is funded by the Ministry of Business, Innovation, and Enterprise.



Patea River mullet. (Maren Preuss)



Courtesy of Bob McDowall



Lake Wairarapa mullet. (Robert Thomson)



Dargaville Beach. (Roy Olsen)



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Please post your completed questionnaire / any other information to either

Grey mullet project

NIWA Head Office, 41 Market Place, The Viaduct, Auckland Central 1010, Private Bag 99940

Or email to

mark.morrison@niwa.co.nz

Grey mullet survey

The survey questionnaire – worked up examples of the grey mullet forms.

The form is designed so you can fill in one form per field observation. Please provide as few or as many observations as you wish; using a new form each time. Please scan and email, or post to us at the address given on the previous page.

Alternatively, if you email us an email address, we will happily send you the form as a Word Document that you can simply fill in, and return to us as an attachment.

A marked-up example is given below. Even if you live somewhere these species are seldom or never observed, filling in a form describing that to us is equally as valuable as observations of where these species are.

If possible (but completely at your discretion), we would like your name and a contact number, so that we can talk with you further about your observations if more detail would be useful.

Grey mullet *(a filled in example below, mock data in blue, instructions in black)*

| | |
|----------------------------------|---|
| Location | Lake Look-at-all-the-mullet (use a geographical name if possible) |
| Date | 1 April 2015 |
| Latitude and longitude | You can get these from Google Maps by right-clicking the mouse key, and selecting "What's here?" This will give you a latitude and Longitude that you can copy e.g. -39.956651, 175.007173 . In Google Earth, the position of the mouse is given at the bottom of the image, also as a latitude/longitude, but in a slightly different format e.g., 39°56'28.30", 175°01 33.90" . Or, you can simply mark your places on a suitable local map and post a copy to us, or ring us up directly to describe where and what you saw. |
| Fish size and description | How many, what sizes were seen (and whether you were certain that they were grey mullet – other species can sometimes be mistaken for grey mullet). E.g. Group of 7 fish, size range 40–45 cm, definitely grey mullet, grazing on cobbles and tree logs , or, 3 fish, size range 20–30 cm, but unable to get close enough to definitely confirm as grey mullet, may have been yellow-eyed mullet . |
| Seen/caught | If you physically caught/handled the fish, any relevant observations e.g. Fish milting when removed from water , or Fish in poor condition and slab sided . |
| Habitat/ Environment | A brief description of where they were seen, both in terms of the water itself (e.g. clear, moderate, very turbid waters; water depth, current speed) and the general environment (e.g. soft or rocky bottom, presence of freshwater plants, lots of dead tree snags). E.g. under road bridge, in small muddy stream, on surface next to pillars , or, in the surf zone , or, in lake margins associated with weck . |

In addition to the above survey forms, if you know of any other relevant information that you think would help us better understand grey mullet populations, please include it also if you are able. Examples might include:

- What times of the year you **did not see** grey mullet at sites where they occur seasonally
- Any seasonal or spawning migrations you think are happening
- Any spawning aggregations or ready to spawn fish (e.g., milting/discharge eggs when handled)
- Any juvenile fish (they settle to benthic habitats at around 12 mm in length) that you have seen, especially in freshwater, or outside of the upper half of the North Island
- Any unusually large fish that you may have encountered
- Any predation seen e.g. by shags, trout, kahawai, kingfish or other predatory species
- Any locations that hold very big grey mullet trapped in freshwater systems now cut off from the sea
- Any longer term changes you think are happening, e.g., grey mullet are becoming more common in your area.

Grey mullet survey form

Location 1

Date

Latitude and longitude

Size and fish description

Seen/caught

Habitat/ Environment

Any other relevant observations or comments

Location 2

Date

Latitude and longitude

Size and fish description

Seen/caught

Habitat/ Environment

Any other relevant observations or comments

Location 3

Date

Latitude and longitude

Size and fish description

Seen/caught

Habitat/ Environment

Any other relevant observations or comments

Location 4

Date

Latitude and longitude

Size and fish description

Seen/caught

Habitat/ Environment

Any other relevant observations or comments

There is also extra space for any comments on the back of this form

Grey mullet survey form

Any other relevant observations or comments

Any other relevant observations or comments

Any other relevant observations or comments

Any other relevant observations or comments

Grey mullet survey form

Location 5

Date

Latitude and longitude

Size and fish description

Seen/caught

Habitat/ Environment

Any other relevant observations or comments

Location 6

Date

Latitude and longitude

Size and fish description

Seen/caught

Habitat/ Environment

Any other relevant observations or comments

Location 7

Date

Latitude and longitude

Size and fish description

Seen/caught

Habitat/ Environment

Any other relevant observations or comments

Location 8

Date

Latitude and longitude

Size and fish description

Seen/caught

Habitat/ Environment

Any other relevant observations or comments

There is also extra space for any comments on the back of this form

Grey mullet survey form

Any other relevant observations or comments

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