Fisheries
Long Term Monitoring Program
Sampling Protocol

Bream, Whiting and Flathead: (2007 onwards)

Section 1

January 2008
Fisheries
Long Term
Monitoring Program
Sampling Protocol

Bream, Whiting and Flathead:
(2007 onwards)

Section 1

Department of Primary Industries and Fisheries
This document may be cited as:


Acknowledgments:

This protocol has been contributed to by all members of the LTMP (North) team, in particular Jason McGilvray, Jonathan Staunton Smith, Steven Wesche and Darren Smallwood. Malcolm Dunning, Eddie Jebreen and Olivia Whybird are thanks for their efforts in the review and production of the document.

General Disclaimer:

The Department of Primary Industries and Fisheries (DPI&F) seeks to maximise the economic potential of Queensland’s primary industries on a sustainable basis.

This publication has been compiled by Fisheries, Assessment and Monitoring.

While every care has been taken in preparing this publication, the State of Queensland accepts no responsibility for decisions or actions taken as a result of any data, information, statement or advice, expressed or implied, contained in this report.

© The State of Queensland, Department of Primary Industries and Fisheries 2008.

Copyright protects this material. Except as permitted by the Copyright Act 1968 (Cwlth), reproduction by any means (photocopying, electronic, mechanical, recording or otherwise), making available online, electronic transmission or other publication of this material is prohibited without the prior written permission of The Department of Primary Industries and Fisheries, Queensland.

Inquiries should be addressed to:
Intellectual Property and Commercialisation Unit
Department of Primary Industries and Fisheries
GPO Box 46
Brisbane Qld 4001

or
copyright@dpi.qld.gov.au
Telephone: +61 7 3404 6999.
Brisbane Qld 4001
Contents

Section 1 –

Rationale 1
Objectives 1
Sites 2
Times 3
Monitoring procedures 3
  Sample design 3
  Length structure 3
  Age structure 3
  Sex structure 3
  Recreational data collection 4
  Commercial data collection 5
  Laboratory procedures 5
Permits and approvals 6
  Permits and permissions 6
  Notifications 6
Data access 6
References 7

Section 2 – Operational Protocols

Section 2 of this sampling protocol can be obtained by contacting the Fisheries Data Coordinator:

Telephone +61 7 3405 6822, Fax +61 7 3224 2805 or
Email FishDataCoordinator@dpi.qld.gov.au

Acronyms

DPI&F  Department of Primary Industries and Fisheries, Queensland
LTMP  Long Term Monitoring Program, DPI&F
RFISH  Recreational Fishery Information System, DPI&F
Rationale

Bream, whiting and flathead are amongst the most popular angling species in south east Queensland. Because of their largely estuarine lifecycles, these species are targeted using small boat and shore based angling techniques, and can be accessed by a large proportion of the recreational fishing population. Department of Primary Industries and Fisheries (DPI&F) Recreational Fishery Information System (RFISH) 2005 diary surveys estimated the recreational catch of bream, flathead and summer whiting at approximately 7.7 million fish DPI&F (data available from http://chrisweb.dpi.qld.gov.au/chris).

Bream, whiting and flathead are also targeted by commercial fishers as part of the inshore finfish fishery, and to a lesser extent by the charter fishery. In 2005, the commercial fishery harvested 651 t of bream, whiting and flathead DPI&F (2007a).

The need to include the recreational fishery in any future fishery assessment on bream, whiting and flathead was highlighted by O’Neill (2000). O’Neill (2000), surmises the obvious need to monitor commercial and recreational fisheries in southern Queensland, based upon increasing human population; leading to increased competition for fisheries resources. Further, a structured monitoring program was seen as essential by Hoyle et al. (2000); for the state government to meet management requirements for key inshore finfish species (including bream, whiting and flathead) in southern Queensland.

Based on the DPI&F schedule stock assessments for yellowfin bream, sand whiting and dusky flathead will be undertaken in 2008. Apart from the Commercial Fisheries Information System (CFISH) logbook program and the RFISH program, the most recent population length and age structure data was collected by Hoyle et al. (2000) in southern Queensland, as part of the integrated fish stock assessment monitoring program (ISAMP), and O’Neill (2000) in three rivers/ estuaries, namely; Pumicestone Passage, Maroochy River and Burnett River. In January 2007, the DPI&F Long Term Monitoring Program (LTMP) began collecting representative length, sex and age structure of these species from all sectors of the fishery, using a variety of strategies.

Objectives

The LTMP aims to collect length, sex and age data, representative of the commercial and recreational catch of:

- Yellow finned bream (*Acanthapagrus australis*)
- Dusky flathead (*Platycephalus fuscus*)
- Sand whiting (*Sillago cilliata*)
- Golden lined whiting (*Sillago analis*)
- Winter whiting (*Sillago maculata*)
Sites

Data will be collected from the estuarine and ocean beach areas between Baffle Creek and the Queensland – New South Wales border. Sites are recorded as per the LTMP data protocol (DPI&F In Prep.a).

Figure 1. Study area for the Bream, Whiting and Flathead monitoring program. Long Term Monitoring Program (LTMP) regions, as defined in the Data Protocol (DPI&F In Prep.a), are labelled with underlined text. Additional LTMP regions not displayed include Sunshine Coast Estuarine and Gold Coast Estuarine. Ocean Beaches are coloured red and labelled with italicised text.
Data for all species are collected throughout each calendar year from all sectors.

**Monitoring procedures**

**Sample design**

**Length structure**
Length structure of the catch (recreational or commercial) is determined by accessing catches from a fisher or group of fishers. Measuring fish from many individual catches from different areas at different times ensures that the lengths recorded are representative of the fish caught by the entire fishery.

**Age structure**
Age structure of the catch is determined by sub-sampling catches for the purpose of estimating fish age. Fish included in the age estimation sub-sample are dissected and age is estimated for each by the interpretation of the fish otolith. Sub-sampling for age estimation for bream, whiting and flathead is stratified by length and sex, and uses an age–length key to infer the age structure of the remainder of the catch that was only sampled for length (Table 1). The advantage of using an age–length key is that only a fixed number of fish from each size class need to be aged, which significantly reduces sampling costs.

**Table 1. Species requiring otoliths to be collected per sex, and numbers per length class**

<table>
<thead>
<tr>
<th>Common name</th>
<th>Species</th>
<th>Otoliths required per sex</th>
<th>Otoliths per 10 mm length class</th>
<th>Approx no. collected per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand whiting</td>
<td><em>Sillago ciliata</em></td>
<td>yes</td>
<td>10</td>
<td>400</td>
</tr>
<tr>
<td>Golden lined whiting</td>
<td><em>S. analis</em></td>
<td>yes</td>
<td>10</td>
<td>400</td>
</tr>
<tr>
<td>Winter whiting</td>
<td><em>S. maculata</em></td>
<td>no</td>
<td>25</td>
<td>450</td>
</tr>
<tr>
<td>Yellowfin bream</td>
<td><em>Acanthopagrus australis</em></td>
<td>yes</td>
<td>15</td>
<td>500</td>
</tr>
<tr>
<td>Dusky flathead</td>
<td><em>Platycephalus fuscus</em></td>
<td>yes</td>
<td>10</td>
<td>600</td>
</tr>
</tbody>
</table>

**Sex structure**
Sex structure of the catch is inferred using a sex–length relationship. Sex–length relationships are used to estimate the sex structure of the catch in much the same way as age–length keys are used to estimate the age structure of the catch.
Recreational data collection

The following sources are used to obtain bream, whiting and flathead samples from recreational anglers:

- boat ramp surveys (DPI&F 2007b)
- ‘keen’ angler collection (DPI&F In Prep.b)
- charter boat sampling (DPI&F 2007c)
- Fraser Island surveys (DPI&F In Prep.c) and Fraser Island fishing competition (DPI&F In Prep.d).

Boat ramp surveys – Recreational anglers are targeted at approximately 400 boat ramps per year (DPI&F 2007b). The primary focus of these surveys is to collect fish length measurements from the recreational fishery, fish frames (skeletons) are also collected opportunistically. Capture location information is also collected.

Keen angler collection – ‘Keen’ recreational anglers are sought out, to keep frames of fish captured and record capture location information. Drop off or storage arrangements are managed by project staff (DPI&F In Prep.b). (Note: “keen” does not reflect the angler’s skill, rather the willingness to participate)

Charter boat sampling – Charter operators are provided with equipment and training to record fish length measurements and capture location information (DPI&F 2007c).
**Commercial data collection**

Both fish frames and representative length data are collected from the commercial fishery (DPI&F In. Prep.e). Sampling effort is applied to each LTMP region (DPI&F In Prep.d) using the following percentages:

- 50% Moreton Bay
- 10% Sunshine Coast estuarine
- 40% Fraser inshore
- ocean beach locations are sampled opportunistically

Data is collected by:

- accessing fish by visiting seafood processors
- direct access through the individual fishers either at the site of the fishing operation or at their land base.
- Capture location information is sourced from the commercial fisher whose catch is measured.

**Laboratory procedures**

Frames or fish collected from fishers are processed in the laboratory. Species identification is first verified, then fish are measured (fork/total length) to the nearest 10 mm. Sex is determined, for all species, by macroscopic examination of the gonads.

Where required for ageing based on size and sex (Table 1) (see also DPI&F 2007d), otoliths are removed in the lab and stored in vials. Age estimation is made by viewing whole or sectioned otoliths, depending on the species (DPI&F 2007e).

More detailed methods are described in Section 2 (DPI&F 2007d).
Permits and approvals

Permits and permissions

This project does not require permits or animal ethics approval to catch samples as they are taken by recreational or commercial fishers as part of normal fishing practice and provided to DPI&F for the project. A DPI&F - General Fisheries Permit (Fisheries Act 1994) is required to possess fish outside legislated possession or size limits.

Survey staff familiarise themselves with and follow all permit conditions and have a copy with them during each survey.

Notifications

The following notifications must be sent at least one week prior to the surveys, quoting relevant permit numbers and any variations to the methods:

- Queensland Boating and Fisheries Patrol
- Queensland Parks and Wildlife Service (Waddy Point) are notified prior to surveys on Fraser Island.


Stakeholders and the general public are kept informed through a variety of media resources including press releases, pamphlets, reports and web site information, as described in the Assessment and Monitoring Communication Strategy.

Data access

Access to LTMP data is subject to a formal application process. The Fisheries Data Coordinator is to be contacted for all applications: Telephone +61 7 3405 6822, Fax +61 7 3224 2805 or Email FishDataCoordinator@dpi.qld.gov.au.

All use of DPI&F data is subject to a data agreement between the Department and the party requesting the data. The data agreement covers how data must be acknowledged in publications and other restrictions that may be placed on data use. If the publication is based substantially on LTMP data and on LTMP survey design then co-authorship may be requested or advised. All documents that utilise LTMP data must be sent to the Fisheries Data Coordinator as drafts for perusal before they are published. Copies of final documents utilising LTMP data must be provided to the Fisheries Data Coordinator free of charge for lodgement in the DPI&F library.
References


