A Report Prepared by
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Specialist in spat management and spat performance improvement, mussel hatchery and nursery operations, environmental monitoring and data analysis.

Spat Catch Analyst, Managing Director: Aquaculture Solutions 2007 – present.
Sole contractor to industry spat catch collectives and individual mussel production companies since 2007.

Knowledge provided in the following report is the cumulative result of many years of first-hand experience in the Mussel Industry, personal observations and communications with long-standing industry members.

Wainui Bay *Perna Canaliculis* Spat Catch

Wainui Bay is the highest contributing Spat Catching Site in New Zealand. Weekly monitoring over several decades clearly shows that Wainui consistently provides the best spat catching potential of all monitored spat catch sites. That is, Wainui Bay has the longest catch season, highest potential spat catch/metre of catch rope and invariably the highest spat catch per metre every week of all catch sites.

Wainui Bay is geographically accessible to spat catchers

Wainui's high spat catch potential is attributed to an eddy current within the bay that accumulates ready-to-settle spat and holds it resident within the catch site for an extended period so spat are repeatedly exposed to catch rope deployed on spat catch lines in the bay. Whist the Ringroad sites typify more oceanic water conditions with abundant bi-lateral water flow and high wave energy. Spat are more likely provided a single attachment opportunity to catch rope deployed at these sites as current flows through. Collingwood Spat Catch site is influenced by long shore tidal flow and more significantly, outflow from the adjacent Aorere River mouth.

The parent stocks of Wainui spat are presumed to reside on rocky outcrops along the South Island's West Coast. Resulting offspring spend their larval stage drifting northward then around Farewell Spit into Golden bay. After this drift period (approximately 4 weeks) larvae metamorphose into spat; seeking a substrate to attach to for life as a sessile adult mussel. Metamorphosis coincides with their arrival in Wainui Bay and the offer of catch rope as an attachment substrate.

Spat Catch Sampling

Every week, rope samples are collected, processed and analysed to determine the number of *Perna Canaliculus* spat caught at various locations and depths within the four Spat Catch sites compared in this analysis.

Custom-made sampling stations are permanently deployed at the sample sites and a 25cm catch rope sample is collected weekly from each station. Spat is removed from the rope sample by chlorinating and analysed under a microscope to count the number of mussel spat caught during the week. Catch results for each sample site are reported as spat catch per metre of catch rope. After collection each station is refilled with with a clean, dry rope sample set to catch for the coming week.

The four Spat Catching sites are sampled according to the following regimes:

Wainui :	North Sample Dropper includes depths 1m, 3m and 6m South Sample Dropper includes depths 1m, 3m and 6m Weekly Sampling all year round
Collingwood:	Single Sample Dropper includes depths of 3m and 6m Weekly Sampling all year round
Golden Bay Ringroad	North Sample Dropper includes depths 3m and 6m South Sample Dropper includes depths 3m and 6m Weekly Sampling 1 November – 30 April
Tasman Bay Ringroad	North Sample Dropper includes depths 3m and 6m South Sample Dropper includes depths 3m and 6m Weekly Sampling 1 November – 30 April

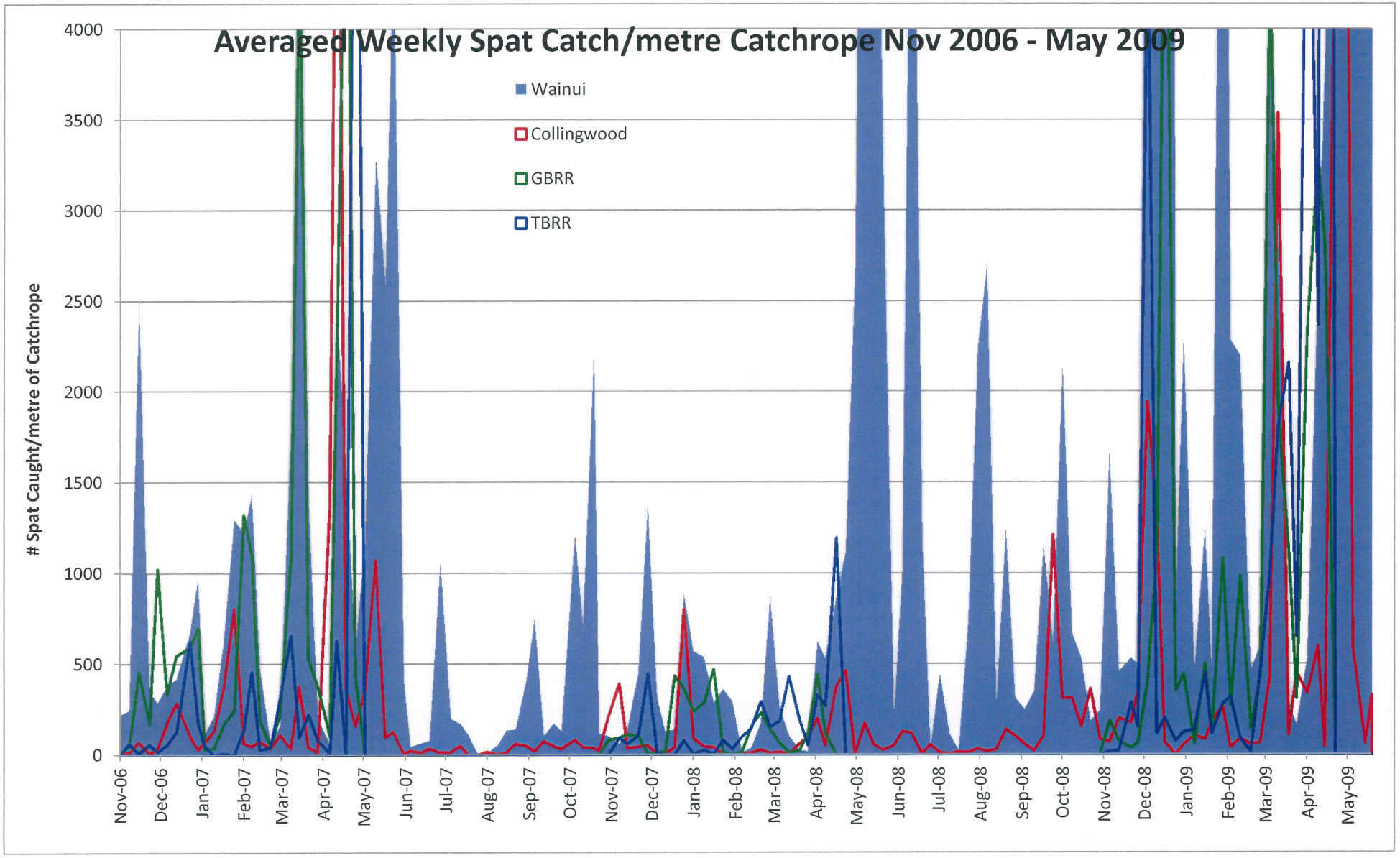
Golden Bay Ringroad and Tasman Bay Ringroad data is collected between November and April each year according to co-operation with the scallop enhancement programme. These sites are unavailable for spat catching for the remainder of the year.

Conversely, whilst Collingwood contributes significant spat catch potential it is primarily used as a mussel crop on-growing site and spat holding area. Very rarely would spat catching be carried out on the Collingwood Site.

Results calculated from these weekly spat samples and displayed in the following graphs portray spat catch potential. They are not proportional to the quantity of spat commercially recruited for on-growing to harvest. Commercial spat recruitment is a function of catch effort, retention success and subsequent spat management.

The graphs attached present weekly spat catch results since November 2006.

The spat catch numbers presented in the following graphs are calculated by averaging the number of spat caught/metre of rope of all sample locations within the Spat Catch site for that week.


Averaged Weekly Spat Catch/metre Catchrope Nov 2006 - May 2009
Wainui
Collingwood
GBRR
TBRR
Spat Caught/metre of Catchrope
4000
3500
3000
2500
2000
1500
1000
500
0
Nov-06
Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
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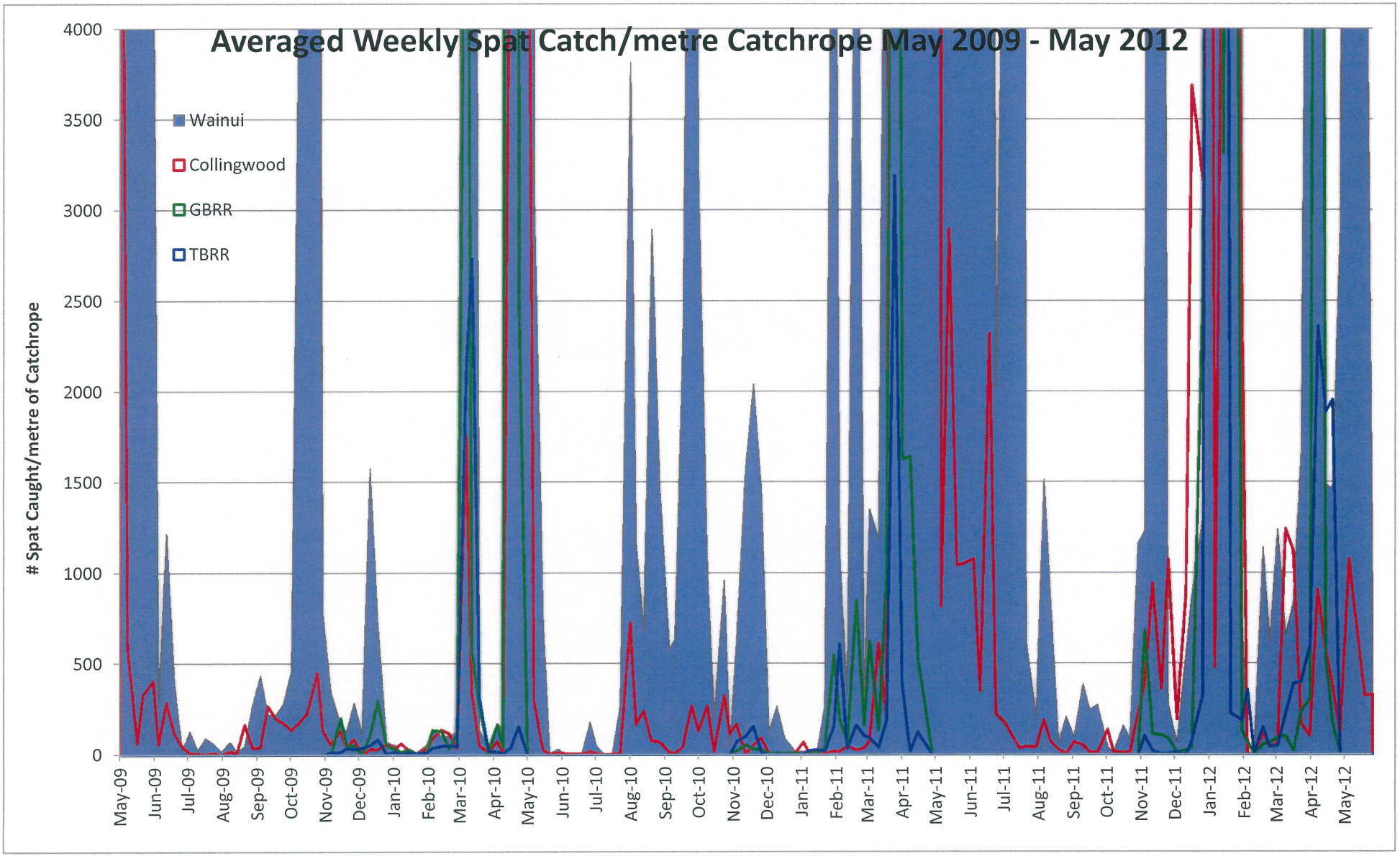
Mar-09
Apr-09
May-09


Averaged Weekly Spat Catch/metre Catchrope May 2009 - May 2012
Spat Caught/metre of Catchrope
Wainui
Collingwood
GBRR
TBRR
0
500
1000
1500
2000
2500
3000
3500
4000
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Aug-10
Sep-10
Oct-10
Nov-10
Dec-10
Jan-11
Feb-11
Mar-11
Apr-11
May-11
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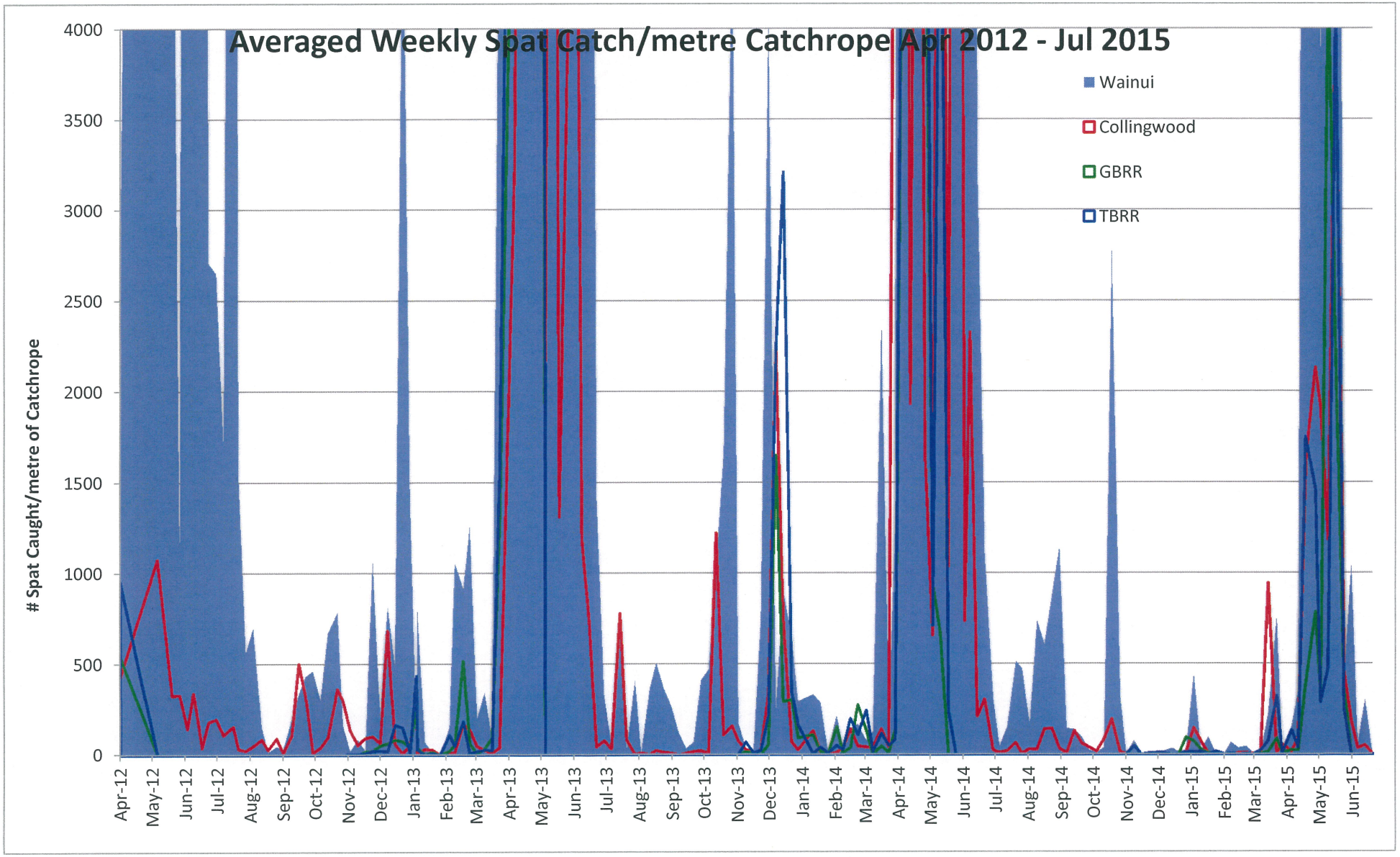
Feb-12
Mar-12
Apr-12
May-12


Averaged Weekly Spat Catch/metre Catchrope Apr 2012 - Jul 2015
Spat Caught/metre of Catchrope
Wainui
Collingwood
GBRR
TBRR
4000
3500
3000
2500
2000
1500
1000
500
0
Apr-12
May-12
Jun-12
Jul-12
Aug-12
Sep-12
Oct-12
Nov-12
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Jan-13
Feb-13
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May-13
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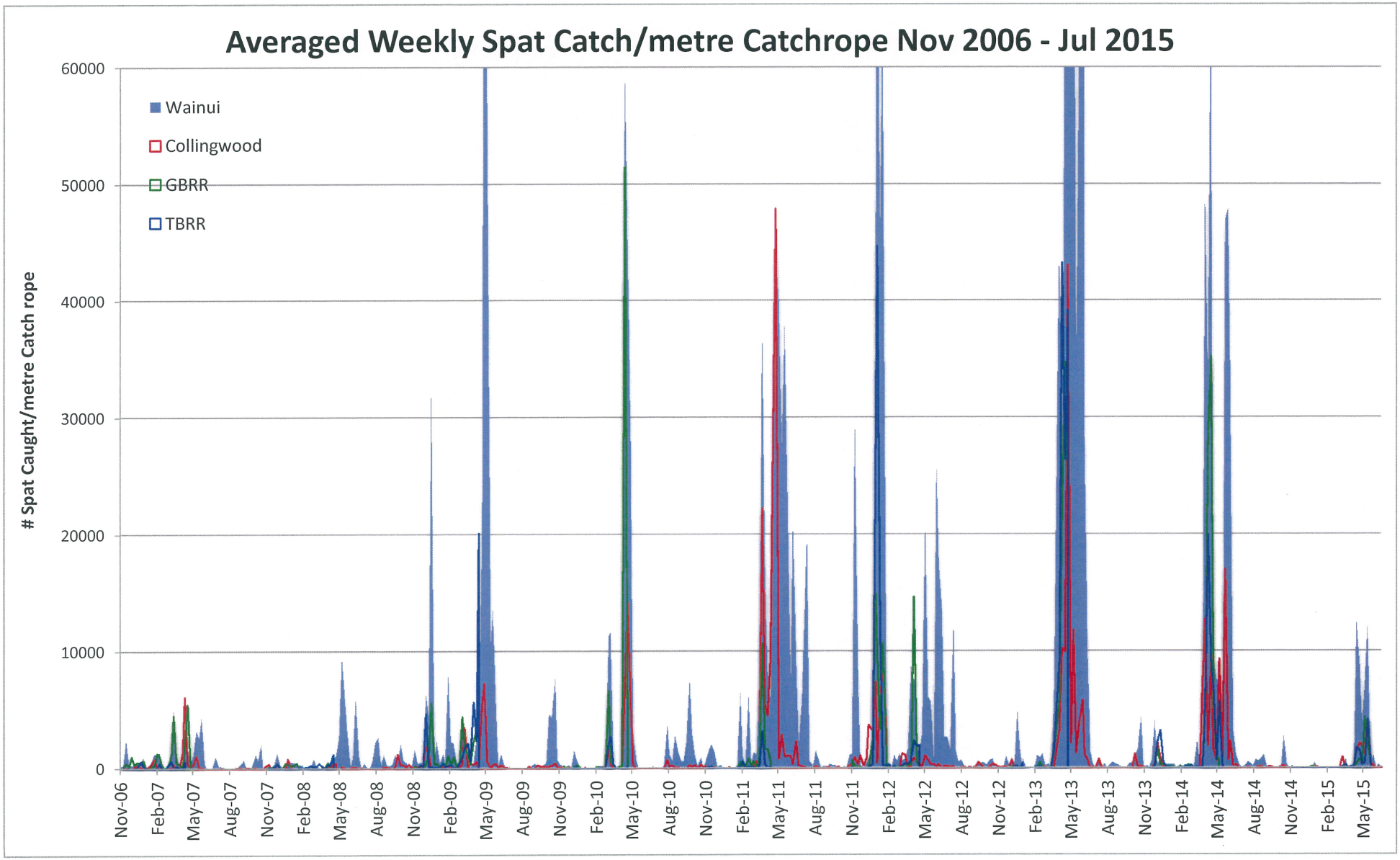
May-15
Jun-15


Averaged Weekly Spat Catch/metre Catchrope Nov 2006 - Jul 2015
Spat Caught/metre Catch rope
60000
50000
40000
30000
20000
10000
0
Wainui
Collingwood
GBRR
TBRR
Nov-06
Feb-07
May-07
Aug-07
Nov-07
Feb-08
May-08
Aug-08
Nov-08
Feb-09
May-09
Aug-09
Nov-09
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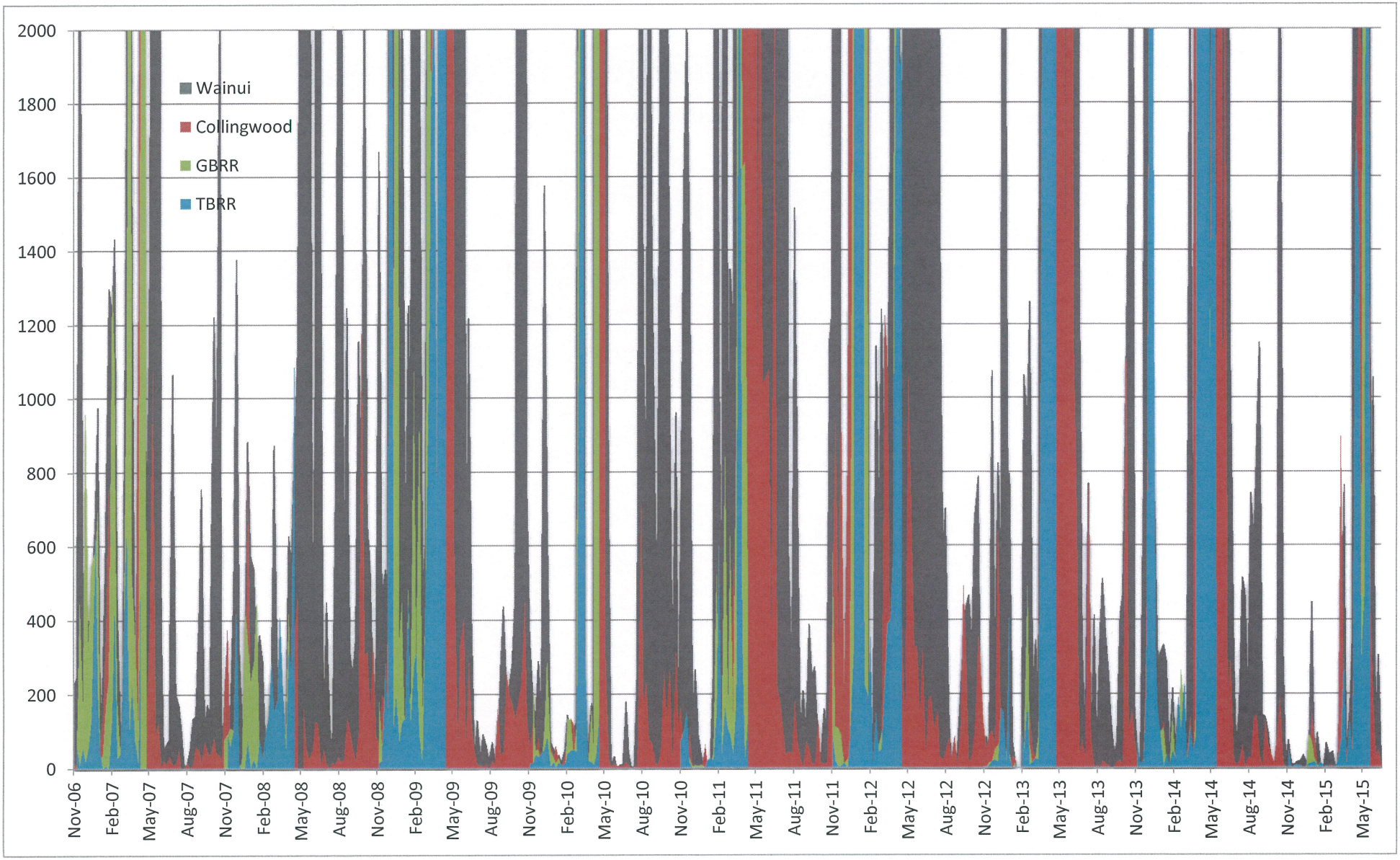
May-15


Wainui
Collingwood
GBRR
TBRR
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Nov-06
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