

COUNTING THE BEASTS seven years on, industry generated data collection programmes provide greater certainty to rock lobster fishermen and fisheries managers.

In 1993, the New Zealand Fishing Industry Board (NZFIB), in association with the CRA 2 and CRA 8 fishermen, established a voluntary rock lobster logbook programme. Paul Starr (NZFIB) and Paul Breen (NIWA) developed the programme design based on an industry generated data project operating in South Australia.

The rock lobster logbook is the longest running logbook of its kind in New Zealand. Over the past seven years, more than 200 commercial fishermen have provided detailed biological information for more than 400,000 lobsters.

TROPHIA researchers, *Nathan Walker* and *Nokome Bentley*, and NZ RLIC's *Daryl Sykes* review the "whys, whats, hows and whos" of the rock lobster logbook programme.

TROPHIA are contracted to the NZ Rock Lobster Industry Council (NZ RLIC) to manage the Rock Lobster Logbook database and the annual analysis and reporting procedures.

Why a logbook?

Stock assessments rely on information about the size and characteristics of the catch. While data on the total catch weight and fishing effort of the rock lobster fishery are derived from the compulsory Ministry of Fisheries returns provided by commercial fishermen, information on the composition of the catch – for example the proportion by maturity and size class - must be obtained through more detailed stock monitoring.

Traditionally, scientific observers have been employed to conduct intensive catch sampling aboard commercial vessels. Due to logistical constraints, such personnel usually sample a large proportion of the catch from a small proportion of fishing trips made by a small number of fishermen in each region.

Alternatively, fishermen can sample their own catch and record it in a logbook. Again, logistical constraints mean that each fisherman can usually only sample a small proportion of their catch on each day. However, the advantage of logbooks is that every day fished produces a catch sample. If that small effort is expended over the entire fleet the net result is that a significant proportion of the catch is sampled from a large number of fishing days over the course of the season.

This type of extensive sampling is more likely to produce data that is representative of the fishery, particularly when there are large differences between the catch characteristics of different vessels. Logbook programmes also enable coverage in more remote or highly weather dependant areas, which can be expensive to sample using scientific observers.

Because the data is more representative, and because they collect it themselves, fishermen have confidence in the data when it is used in stock assessments or for management planning purposes. Logbooks are an efficient, credible and very cost effective information gathering option for the seafood industry.

What is recorded?

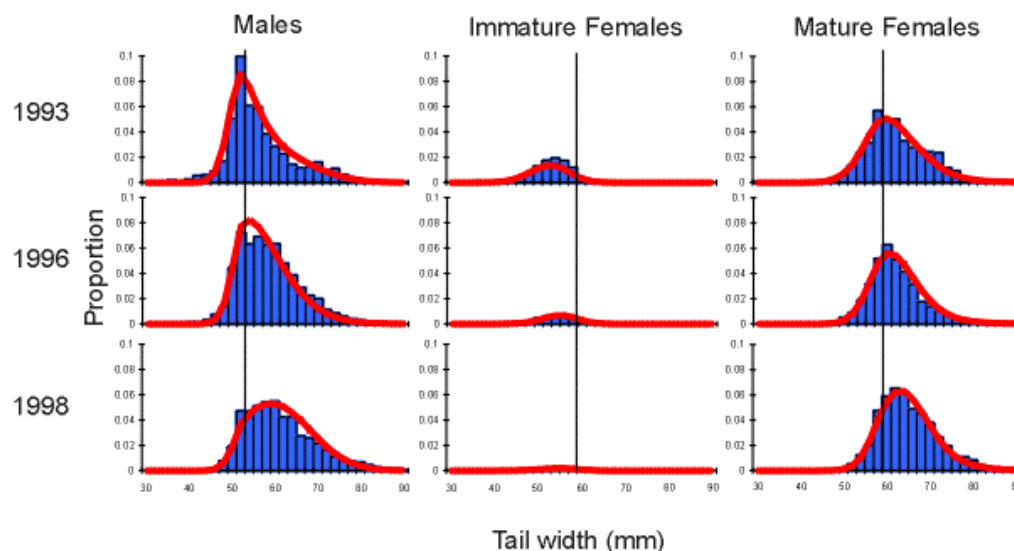
Logbook participants chose four of their pots, representative of their general fishing pattern. Each chosen pot carries an identification label. Fishermen record details of their activities during each fishing trip. The trip information recorded includes the date, the vessel used, and statistical area fished. When the participant lifts any of their labeled pots, they record the zone fished, depth and the length of time that the pot was in the water. For each potlift, any lobsters caught are counted, and up to twenty-five lobsters are sexed, staged and measured.

How is it used?

The data collected by this logbook programme is essential to the stock assessment process. The current stock assessment model is fitted separately to the catch size frequencies of males, immature females and mature females. These provide invaluable information to the model regarding the changes in the composition of the catch. For example, in the stock assessment for the CRA1 and CRA2 stock, the logbook data showed a clear shift through time towards higher proportions of larger lobsters of both sexes (Figure 1). This, as well as an increase in catch rates during the 1990s, was interpreted by the model to be a result of a period of higher than average recruitment in the early 1990s.

Summaries of the data are produced for individual participants at the conclusion of each fishing season. These include graphs of their catch rates, mean size of their catch and size frequencies. The data is summarised so that the privacy of individual fishers is not compromised.

Figure 1. Size frequencies for male and female rock lobsters from the Autumn/Winter period for the CRA 1 and 2 stock assessment (Blues bars are logbook data and the red lines are predicted values)



Who has made it successful?

The logbook programme would not be possible without the commitment of participating fishermen. They have volunteered the time and effort to make a significant contribution to the monitoring of the stock and by doing so, provide the rest of the fleet and all quota owners with a great service.

The NZ RLIC and CRAMACs have long recognised the value of the contribution made by participants and have endeavoured to provide some measure of recompense by way of monthly lotteries and seasonal travel prizes. Planning for the 2000/01 research programme includes provision for more tangible recognition for all participants, not just the lucky ones.

Also instrumental in the success of this logbook programme are the CRAMAC field technicians that provide the personal contact with the logbook participants. *Justine Longland* and *Simon Anderson* (CRA 2), *Belinda Sawyer* and *Sue Graham* (CRA 8), and *Gill Rowe* (CRA 5 and 9) have been invaluable in recruiting new participants and providing assistance and supervision in the field.

Since 1996 the programme has been coordinated and managed by the NZ RLIC. Until December 1999 the SeaFIC Science Group maintained the database and provided reports to fishermen. Leading stock assessment scientist Paul Starr has been a stalwart for the

programme and during his time at SeaFIC used the benefits of the rock lobster logbooks to promote similar initiatives for other commercial fisheries.

What is the future for logbooks?

TROPHIA has recently completed a revision of the logbook programme that has included the redesign of the logbook datasheets, the database, data-entry procedures and participant reports. This revision of the logbook was commissioned by the NZ RLIC in response to changed data requirements and to improve the programme to cope with some recent developments in rock lobster fisheries.

Two of the potentially significant improvements to the logbook were the inclusion of zones and high grading information. Zones are “sub-areas” which enable the trends in the fishery to be discerned on a smaller geographical scale than the much larger statistical areas, while protecting the exact location of any ‘secret spots’.

High grading (which is legal for rock lobster) occurs in some regions but was not recorded previously by the logbook or in MFish returns. Active highgrading, such as known to occur in CRA 2 and CRA 5, could distort the index of biomass derived from catch per unit effort information from compulsory MFish returns. Now the participants simply have to tick a box to indicate whether or not the rock lobster measured was kept. Logbook data can now be used by scientists to adjust catch per unit effort data from MFish returns to provide a more accurate index of the stock biomass.

The rock lobster logbook became a Fisheries Required Service in CRA 2 and 8 from the start of the 1999 lobster season. CRA 5 is also looking at this option for the start of the 2001 fishing year. This means that the CRAMACs maintain a contractual responsibility to ensure that the fleet provides sufficient Logbook coverage to meet the standards and specifications required by the stock assessment process. CRAMACs also commission sequences of intensive stock monitoring by trained technicians in order to validate the information provided by Logbook participants.

At present, due to the revision of the logbook and an extra effort on the part of fishermen and the industry technicians the participation rates in the CRA 2, 5 and 8 fisheries have increased dramatically to a level comparable to when the logbook first started (and in one case even higher!).

Intensive catch sampling is still routinely undertaken in other regions but the opportunity is there for fishermen to participate in a more cost effective way to collect the data necessary for stock assessment.

Thank you to everyone involved in the logbook programme over the last seven years.

INNOVATION and INITIATIVE – the evolution of tools of the trade

Rock Lobster Logbook participants are issued with a kit containing all the necessary instructions and data recording paraphernalia. Accuracy in measuring and recording tail width is an obvious prerequisite of the programme and it took some time for the NZ RLIC to find the right tool for the job. The first logbook kits distributed to fishermen in CRA 2 and CRA 8 contained plastic calipers manufactured for use by technical drawing students in schools and colleges – useful, accurate to within a millimetre if correctly used, but in the words of one CRA 8 fishermen, “*a bastard to use*”.

For a brief time the logbook project looked set to founder because it was just too much hassle for working fishermen. At a rock lobster workshop held in Nelson the problem of caliper illegitimacy was being hotly debated when CRA 5 fisherman Trevor Burkhart decided to take the issue in hand and construct the “right machine for the job” – and he did. The original

design delivered by Trevor to the NZ RLIC was trialed and proven to be easier, faster, and more accurate. At which point enter *Aeroscale Ltd.*, a small plastics design and manufacturing venture owned by ex-MFish Observer Programme coordinator, *Warren Tatham*.

Aeroscale was no stranger to fish measuring devices – the company produces and sells a range of durable and accurate fish, shellfish and lobster gauges for recreational fishermen.

Faced with the task of converting a reasonably sophisticated educational tool into an even more sophisticated rock lobster research tool, Warren applied his engineering talent to the production of the MK2 caliper, which is now in general use by the logbook participants.

Never averse to a technical or design challenge, *Aeroscale* also produced calipers for left handed operators, and calipers with larger font sizes for visually impaired operators. There were simply no excuses left for not being in the logbook programme ...

Aeroscale and the NZ RLIC are currently trialing a new era of technical sophistication - digital and dial gauge calipers. And again it was the incessant quest for perfection from Mr Burkhart that drove this latest initiative. Driven by the belief that, whilst more is not necessarily better when it comes rock lobster measurements it is nonetheless potentially useful, Trevor bought his own digital calipers, did the *Aeroscale* modification and set to work. The electronic components of the caliper did not survive the rigours of daily use in the salty and wet environment of a boat deck, but the attempt sparked Warren Tatham into action and the first modified dial gauge caliper came off the *Aeroscale* production line in July this year.

NZ RLIC technician *Simon Anderson* will be conducting the sea trials as part of his CRA 2 Logbook supervision over the coming months and if the MK 3 version survives the test, new calipers will be distributed to logbook participants for the 2001/02 season.