



Seasonality: its effect on SBT growth & condition

As the tuna ranching season progresses, the growth rate of the fish slows down. In 1999, an experiment conducted in a specifically constructed research pontoon examined changes in the growth and condition of SBT throughout the season (March to August).

The experiment:

Two 32m diameter pontoons were set up for the experiment. One was fed pilchards and the other pellets.

The fish were harvested every two weeks from early March onwards.

While this regular harvesting may have influenced the stress levels and subsequently growth, it was important to harvest regularly to assist with the development of future experiments.

The results:

Growth results from the experiments varied between individual tuna, but the overall trends reveal an important point. It was confirmed that most of the growth does occur early in the season (Figure 1), whilst the water is still warm and the fish are feeding well.

Condition index (CI) was tracked throughout the harvests (Figure 2). This is a measure of the 'fatness' of a tuna. It is calculated as the live weight (W in kgs) of a fish, divided by its length (L in cm) divided by 100 cubed.

$$CI = W / (L/100)^3$$

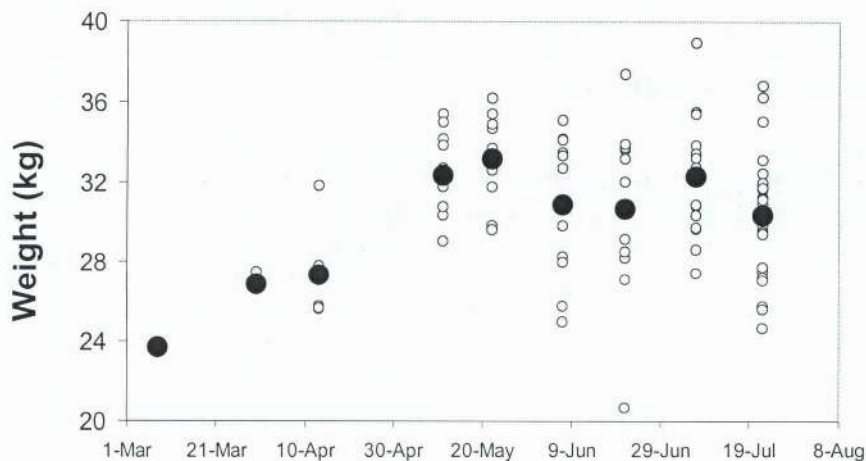


Figure 1. Growth patterns of tuna from one of the large R&D pontoons this year, (filled circles represent averages and non-filled circles represent values for individual tuna).

It was interesting to note that during the early part of the season, condition index and growth were not synchronised. This supports what many farmers noted anecdotally on their own farms, that is that the fish grew length-wise earlier in the season, before filling out later in the year.

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- > SBT growth occurs rapidly early in the ranching season.
- > Fish grow lengthwise before they put on the bulk of their condition.
- > Condition index is a calculation of the 'fatness' of a fish.

Below: Feeding pellets to a research pontoon.



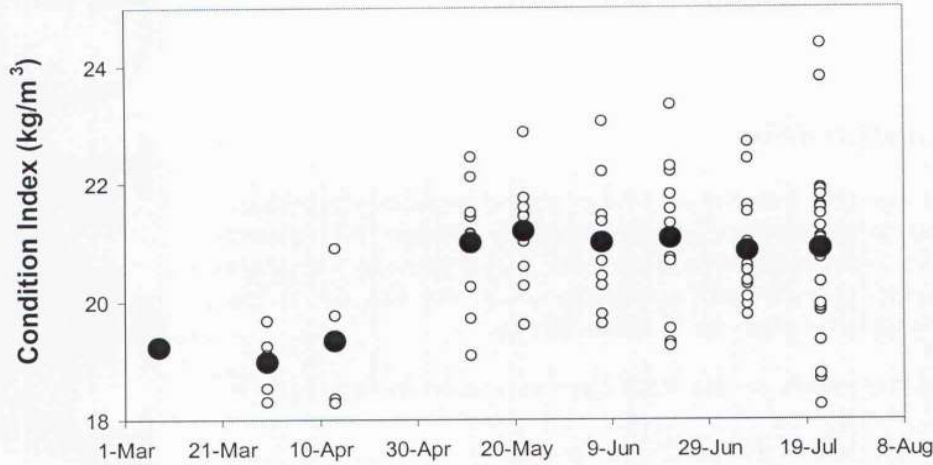
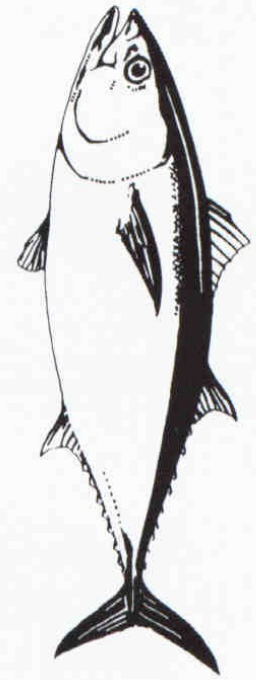


Figure 2. Condition patterns of tuna from one of the large R&D pontoons this year (filled circles represent averages and non-filled circles represent values for individual tuna).

It was also noted that the condition of the fish seemed to plateau quite early in the season, with no real gains beyond those achieved at the same time that growth also peaked (around mid-to-late May). However, it should be noted that the peak condition of these fish was somewhat below what had been achieved on the research farm in previous years. We believe that this is probably due to a combination of having to delay the experiment to accommodate other projects on the farm earlier in the summer, and also the frequent harvesting of these pontoons which probably increased the stress of the remaining tuna.



Above: SBT feeding in a research pontoon off Port Lincoln, South Australia.
Inset: Close up of SBT feeding on baitfish at the surface.