Improving *Nephrops* quality from the “bottom up”
Scottish fish industry

- Don’t believe everything you read in the papers

![Image of fishers in the water]
Scottish Nephrops Fishery

- **Stocks:**
  - Scientific assessment suggests general stock biomass and recruitment stable throughout 1990s and 2000s
    - 2004 Quota for North Sea increased by 14.6% (14,339 to 16,446 tonnes)
    - West of Scotland quota initial decrease of 0.4% from 2003, but this being amended in light of more recent scientific advice
- **Fishing methods:**
  - Trawling (day boast & trip boats)
  - Creel
Scottish Nephrops Fishery

- *Nephrops* are Scotland’s most valuable seafood product, landings in 2003:
  - **Volume** - 20,604 tonnes (live weight)
  - **Value** - Over £52M

- Three main markets/products:
  - Tails (scampi), predominantly UK
  - Whole fresh & frozen (export)
  - Live (export)

- Main export markets Spain, Italy & France
Case study 1 – Amity II

- Amity II, 21m prawn trawler working 7 day trips from Peterhead, fishing on the Fladen Ground
  - Catch predominantly for frozen & fresh whole market, some tails
- Need for quality improvement realised by Skipper in 2003 following visit to European Seafood Exposition
  - Vessel had been achieving lower “pack out” rate compared to other vessels
    - length of trip
    - Poor temperature control on-board the vessel
Solutions

- **Quality improvement methods:**
  1. Freezing at Sea – excellent results can be achieved but very expensive - £50k
  2. Liquid Ice System – rapid cooling of product but again, very expensive - £60k
  3. Chilled Dip Tank – able to cool product quickly at a much lower cost - £6k

- **Opted for chilled dip tank, coupled with improved insulation of fish room**
  - part-funded by EU FIFG grant
Firstly prawns are graded into baskets and washed.
Chilled Dip Tank

Prawns dipped in chilled Seawater & metabisulphite solution (2.5% b/v) at -2°C, for 6 minutes
After Dipping

- Core temperature of prawns reduced from 14°C to 2 °C
- Stored in 20kg boxes (weighed and labelled) in insulated fish hold.
The Results

- Temperature of Prawns reduced rapidly
- Low temperature is maintained throughout trip
- Waste per 20kg box has reduced from 1.3 – 1.8kg down to 0.3 – 0.8kg
- Averaging £4 per box more equating to a 5% increase in sales value
- Made possible by the crew and their willingness to make the changes
Further Developments

- Finding ‘hot spots’ in fish hold using temperature logging probes – can be placed anywhere in the fishroom and data is recorded onto PC, and have made necessary improvements to the hold
- Identifying new markets
  - Running trials on new waxed cardboard boxes, packing at sea into 4 kg boxes
  - HACCP System being developed for on board handling
    - Offering full traceability
  - Desire to see “Amity prawns” in the market place
Further Developments

- New markets for fresh exploited in Italy
  - Italian buyers have positively praised the quality of the product
  - Amity gaining increased prices for this product – due to both quality & time saved by packing at sea
- On a local level “Amity prawns” are being tried in local hotels and retail outlets, while other UK markets are being investigated
- The Amity has received a “Pride in Seafood Award” from Seafish
Case study II – Shemarah

- 10m stern trawler, fishing for *Nephrops* around the Isle of Skye – day trips only
- Landing predominantly whole prawns for the export market
  - Huge price advantage gained by creel fishermen landing to whole live *Nephrops* market gave the skipper the incentive to investigate improving trawling and on-board handling techniques to land a live product
The solution

1. Tow time has been reduced from 4 hrs to 1.5 – 2 hrs

2. Seawater is pumped through the fish reception hopper to ensure the *Nephrops* are kept cool and wet
3. *Nephrops* are hand-graded (S, M & L) straight from the hopper into tubes.
The solution

4. Once a box of tubes is full the box is labelled with tags bearing the vessel’s name, and placed in a tank that has seawater continually pumped through it

5. Advanced landing information given to the processing company

6. Van meets the vessel on landing to minimise the time between the Nephrops being removed from the tank onboard the vessel, and transferred in to vivier tanks at the processor’s holding facility
The solution

7. Prior to final packing at the processing company *Nephrops* are held for 5 -10 minutes in vivier tanks with a water temperature of 2°C to reduce their activity level.

8. *Nephrops* packed in polystyrene boxes, cooled by ice packs, and sent for air freight to Spain via Edinburgh & Manchester.
The results

- Shemarah landing live prawns of the same quality, and with the same mortality rate as top creel vessels
  - Key Spanish buyers visiting Skye were unable to tell the difference between creel caught and trawl caught prawns
- Vessel has increased the value of its landings per Kg 4 x
- Can effectively now, “catch less to earn more”
In both examples good relationship between catchers & buyers, in both cases driven by the fishermen.

Fishermen often suffer from a bad image, many do appreciate that “quality pays”, and are keen to identify and implement systems to make this happen.