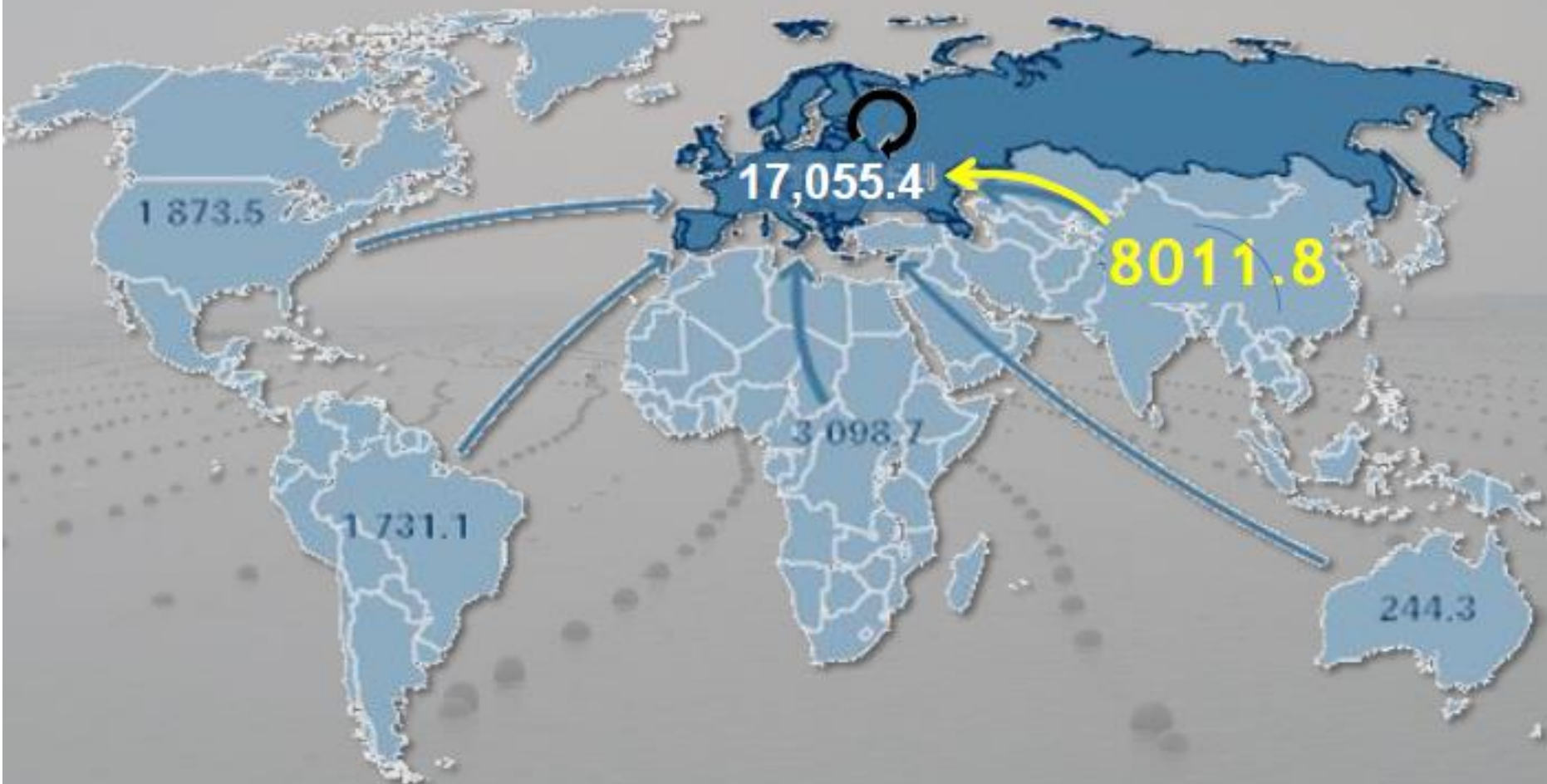


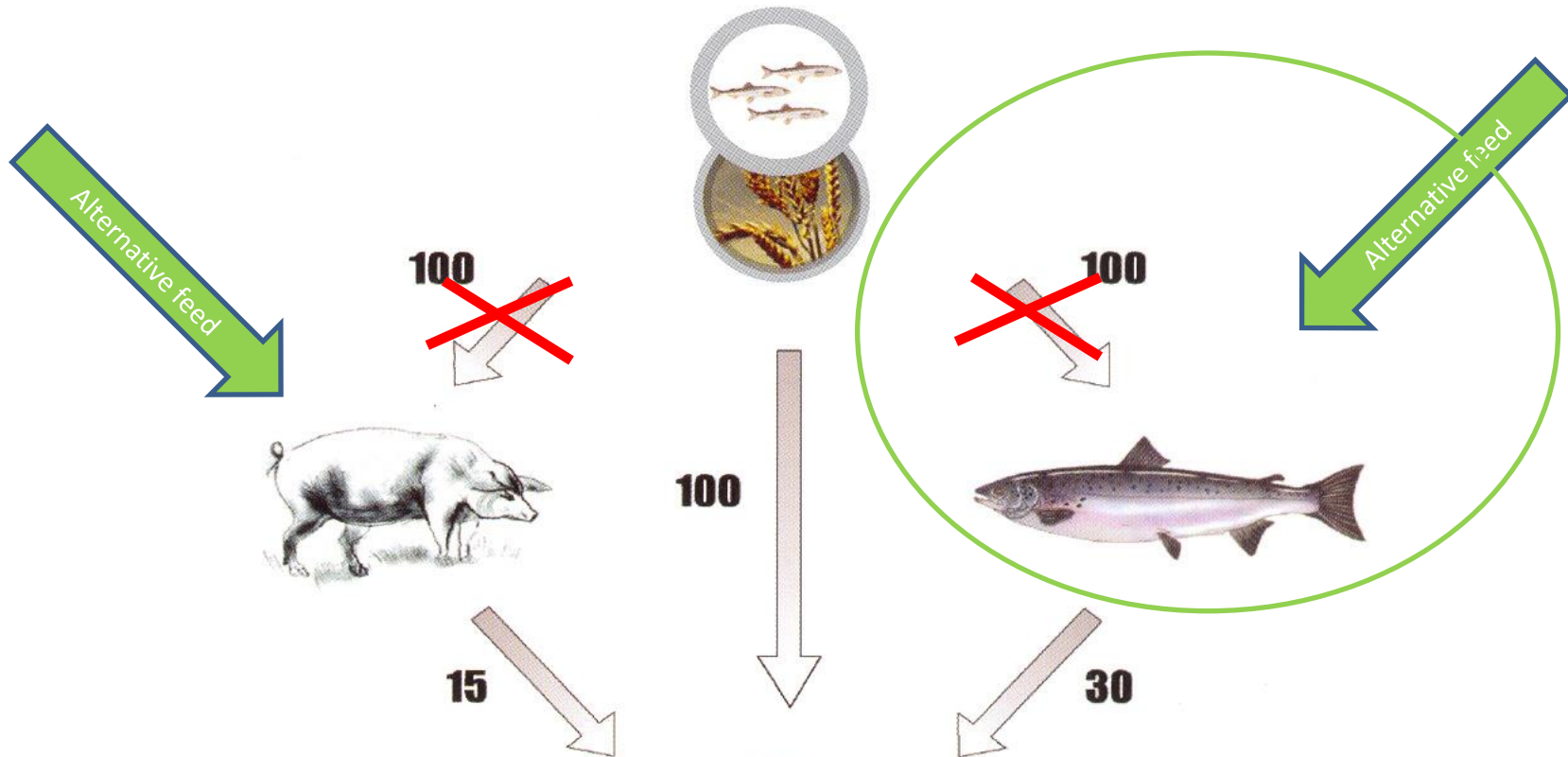
# Nationell Vattenbruks- Konferens 2016

Anders .Kiessling@ SLU.se

## Europe imports more than 70 % of its seafood needs



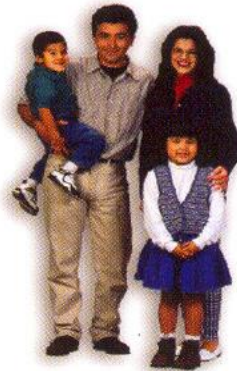
# Animal or Man ?



47% of soy and 60% of corn produced in the US is used in animal feed.

(Grace Communication Foundation)

And about  $\frac{1}{4}$  of world catches of fish is used as animal feed.





EU, presently focus open Atlantic and Mediterranean cage farming.

We must move towards a more diverse and location based approach.



Aqua – Agro circular production systems



# Fyra drivers ett budskap:

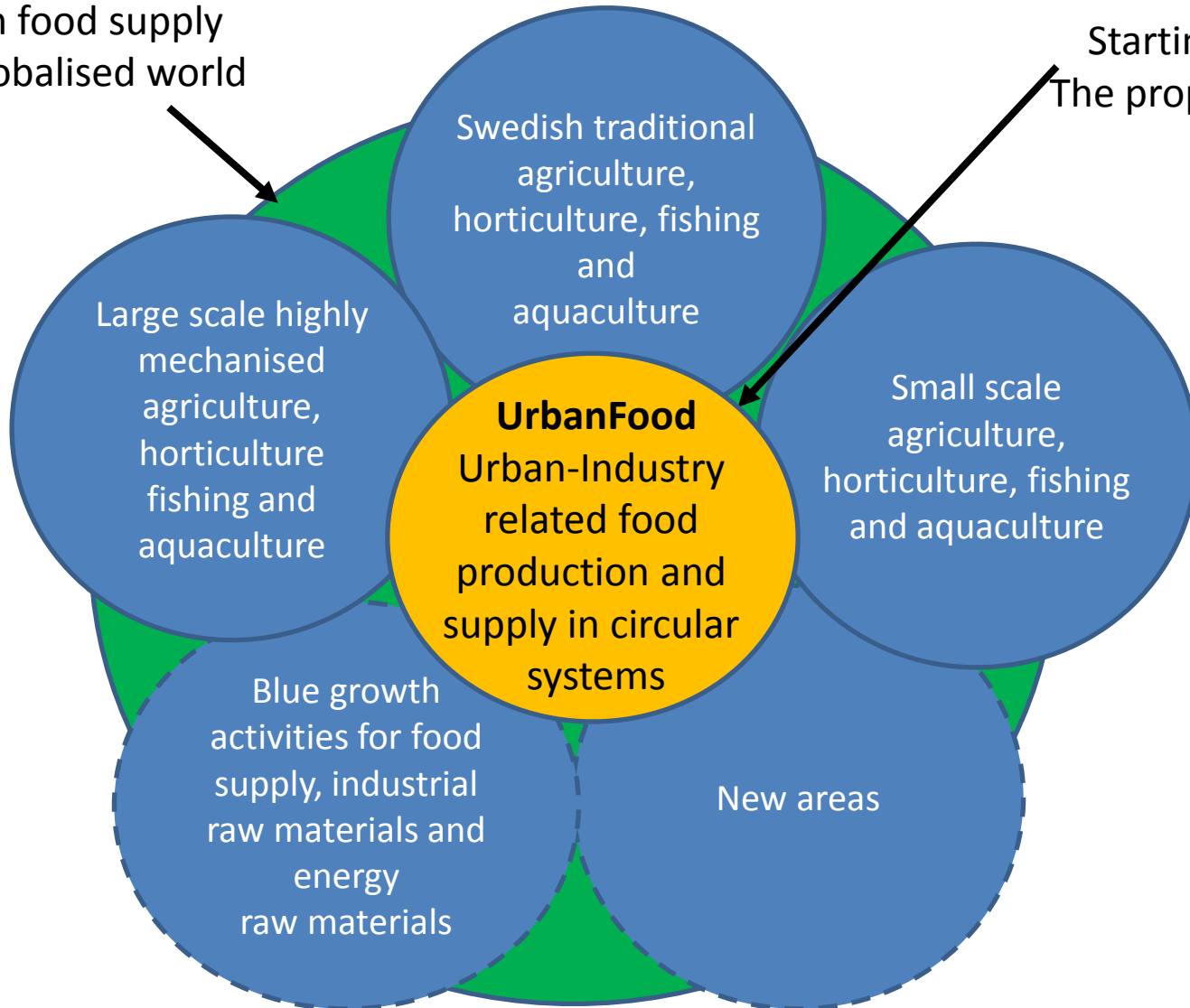
1. -Multi stakeholder opinions and actions
2. Lokal matsäkerhet
3. Cirkulära produktionssystem
4. Klimatsäkrad matproduktion
5. Matproduktion obunden till bördig mark och stora färskvattensresurser

# The Strategic Innovation Area (SIA)

## Urban food supply in a globalised world

Urban food supply  
in a globalised world

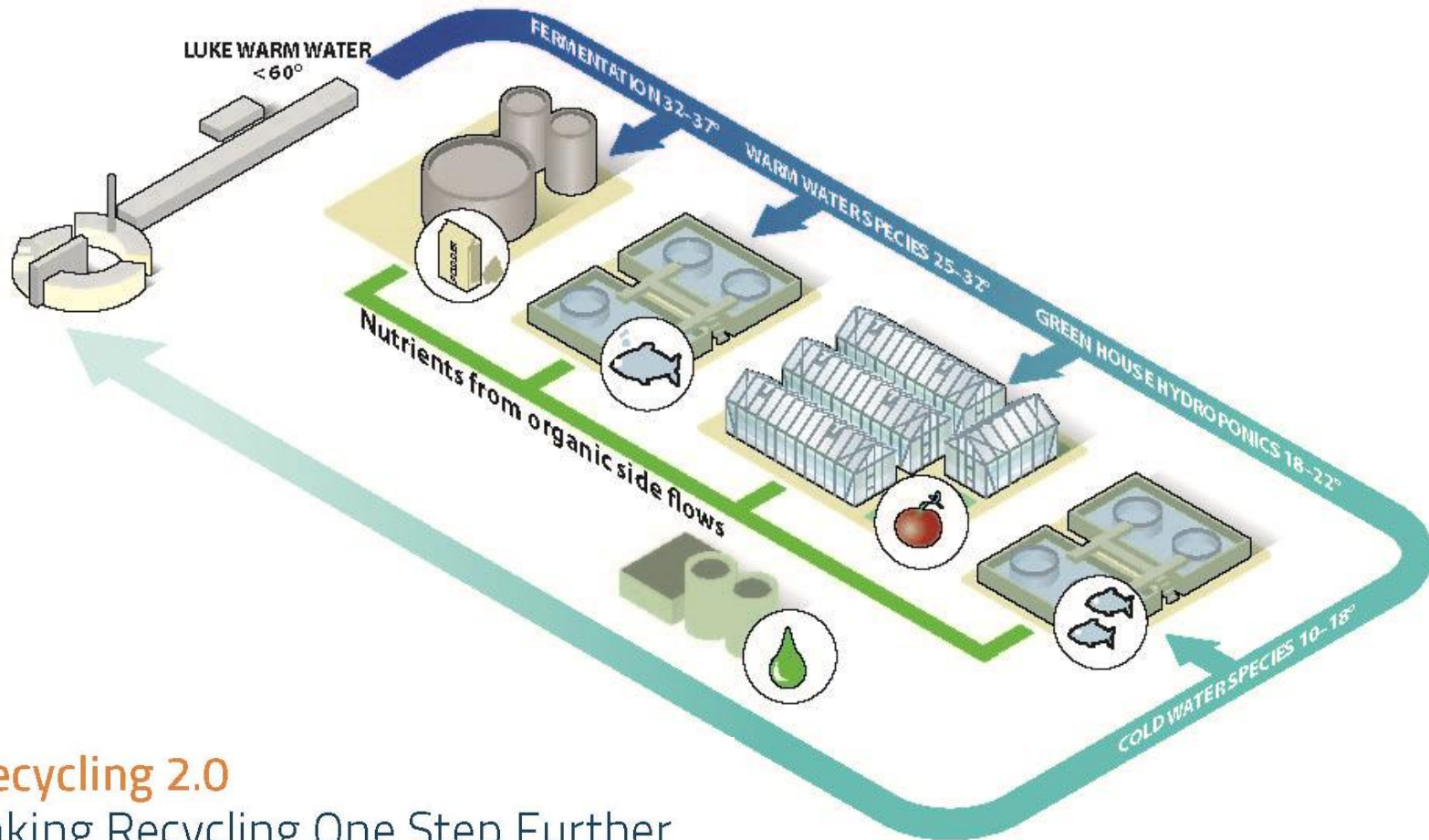
Starting point:  
The proposed SIP\*



\*SIP = Strategic innovation programme

# SURPLUS ENERGY AND FOOD PRODUCTION.

*Anders.kiessling@slu.se*



## Recycling 2.0

Taking Recycling One Step Further



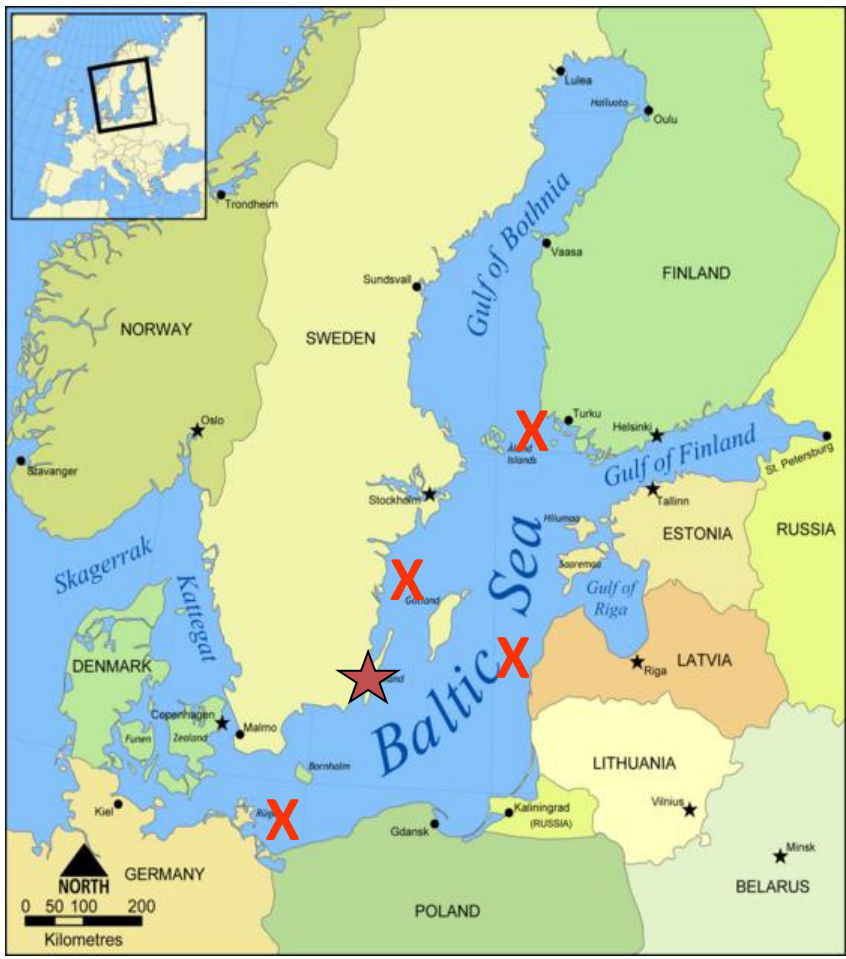




# Mussel farming in Southern Baltic

- Alternative to Fish Farming (socio economics)
- A Tool in a Nutrient Emission Trading System
- Low in natural feed chain

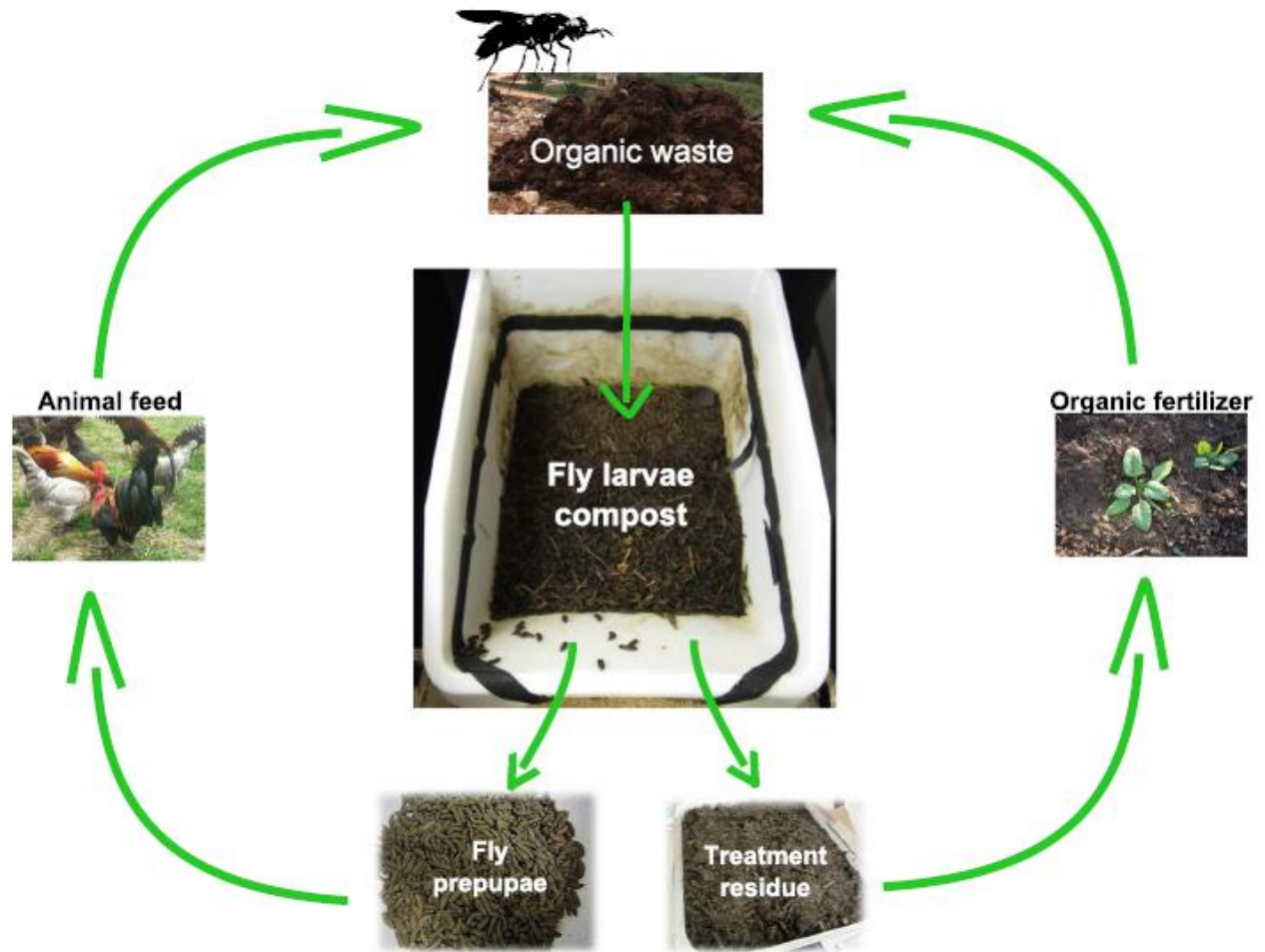
-Recapture Nutrients as Mussel/insekt meal



★ & X =Experimental mussel farms

# Insekter som foder

Fig. 1 A graphical representation of the concept of fly larvae composting: organic waste is consumed by fly larvae, in the sixth and final larval stage, the prepupae migrate out of the compost. The prepupae can be used as animal feed and the treatment residue used as organic fertilizer. The loop is closed when the animal manure and food waste is diverted as substrate into the fly larvae compost



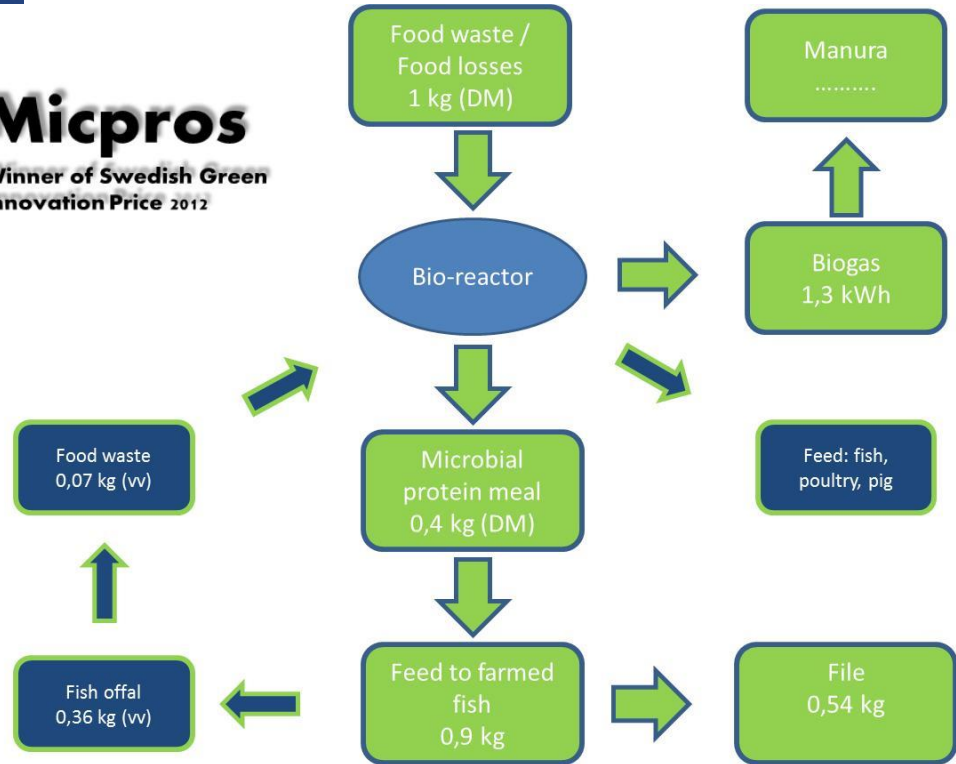
# ForestFish



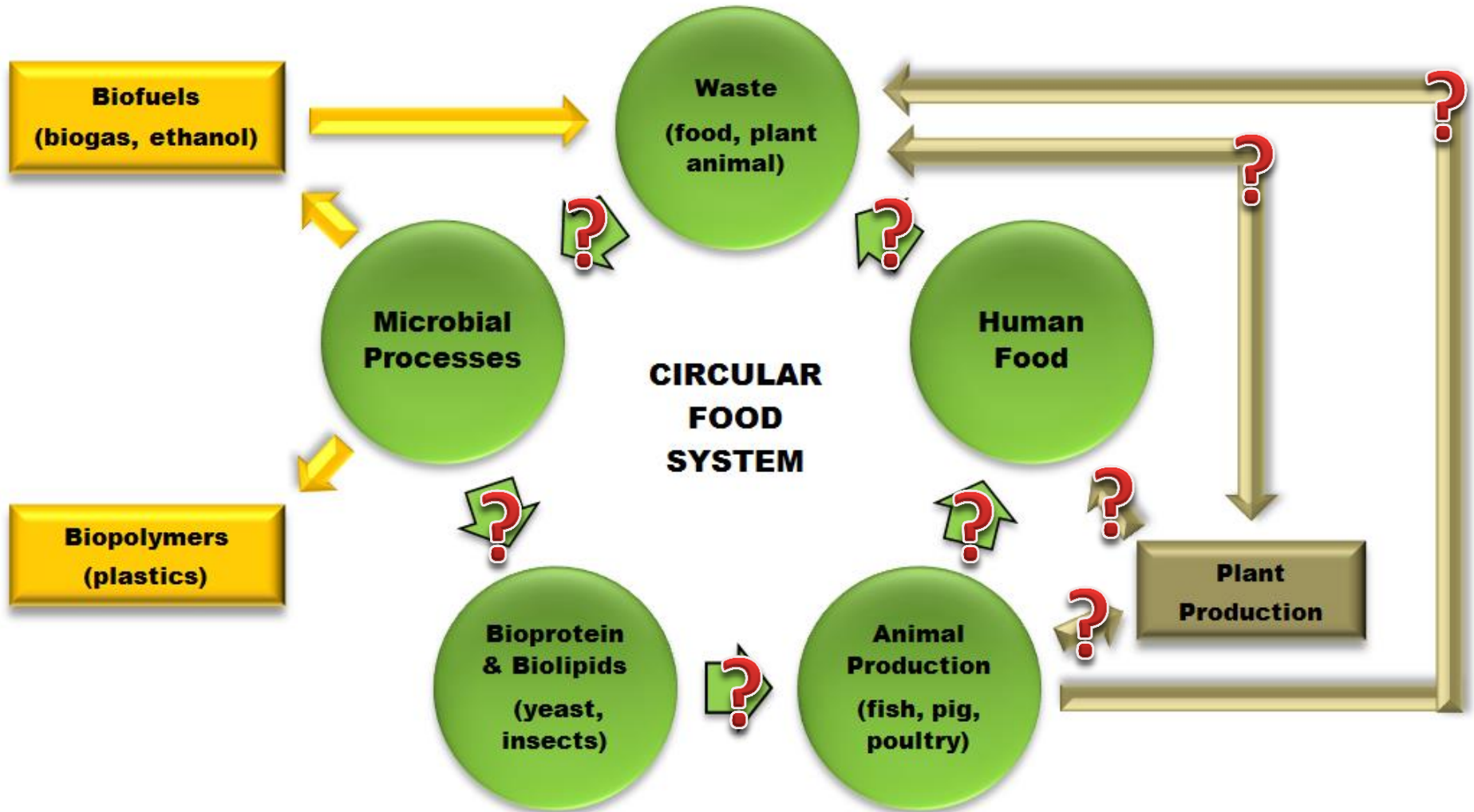


# Micpros

Winner of Swedish Green Innovation Price 2012



# But? Recapturing Pathogens?



# YH utbildningen fortsätter!



# Odlat i Sverige, kvalitet från sjö och hav

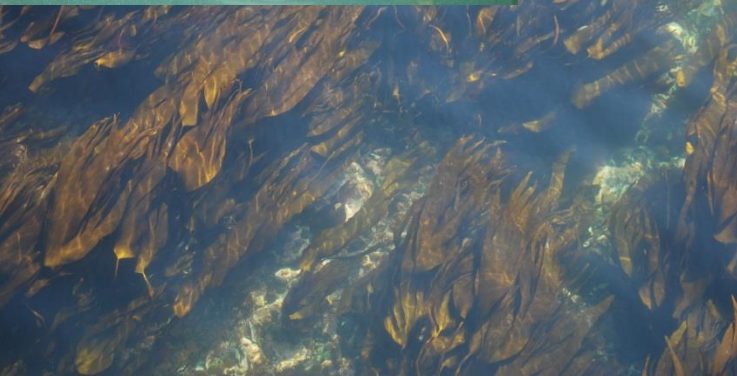
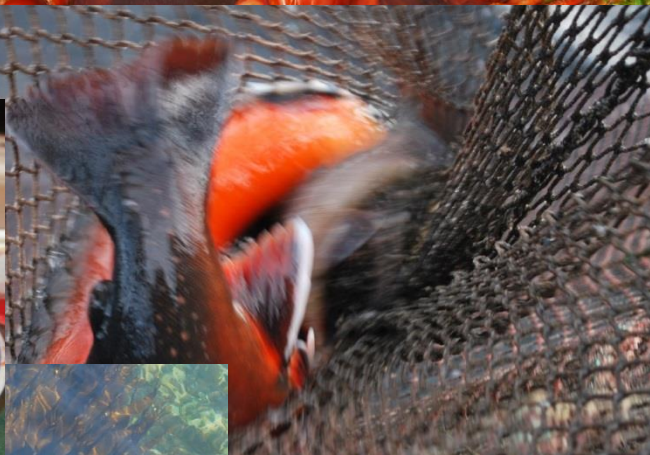
Courtesy of IMR



Bild A.Kiessling



Bild A.Kiessling





# WHITING

Excellent Quality



The eye is bright, clear and bulging.



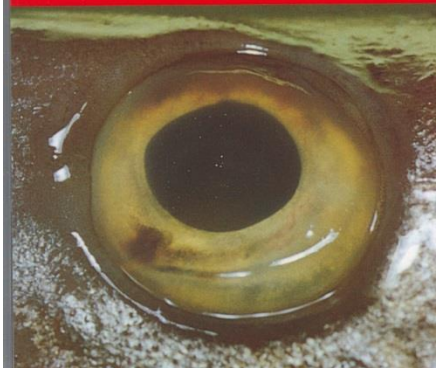
Gills are bright red and there is little or no mucus. They smell like seaweed.



Skin is bright, shiny and colourful. The mucus is transparent.

# HADDOCK

Bad Quality



The eye is dull and sunken. It is milky and turning brown.



The gills are pale and becoming brown. Mucus is cloudy. They smell sour



Skin is becoming discoloured and dull. Mucus is milky.

# Aquafresh

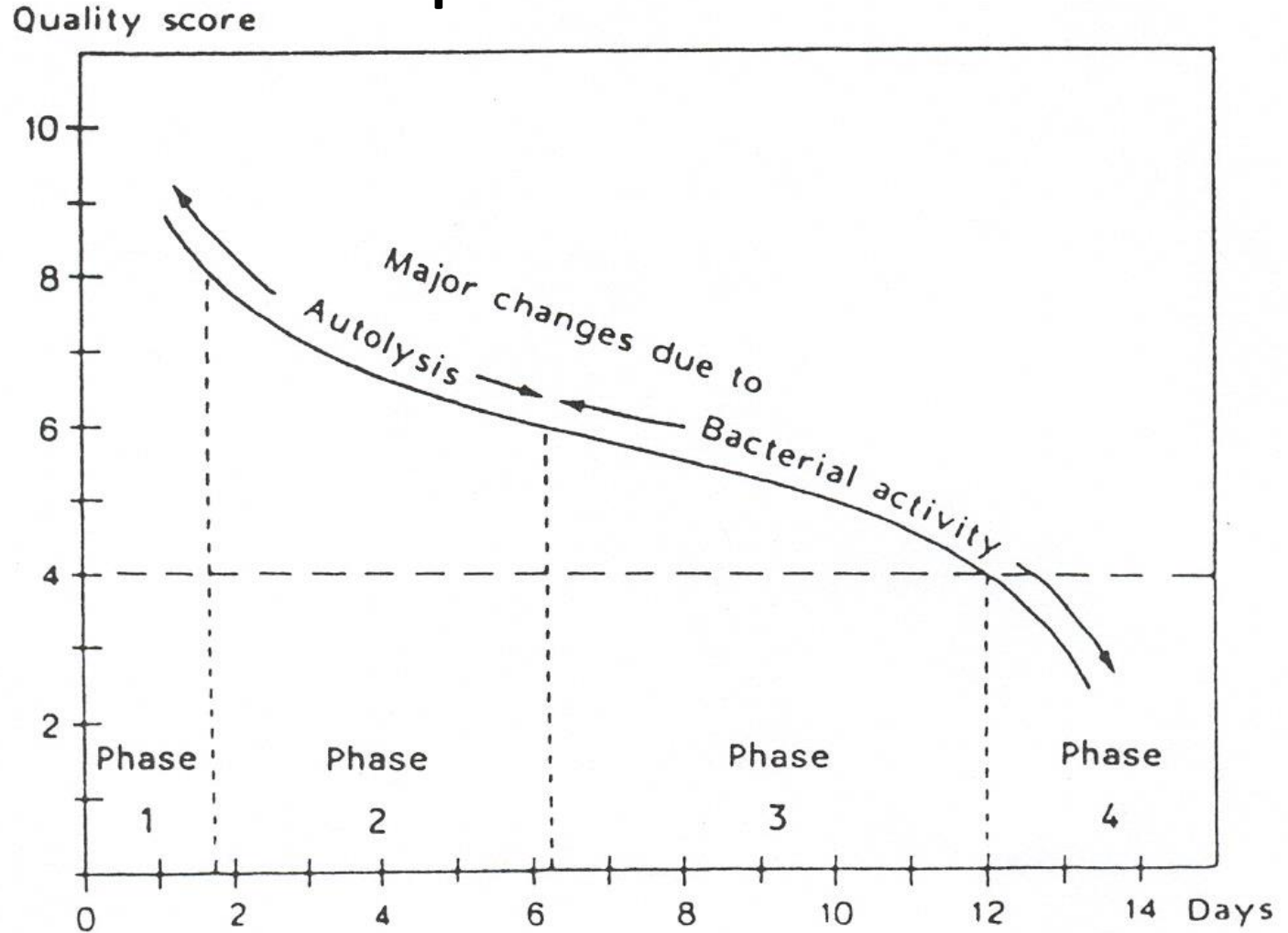


Figure 5.1 Changes in the eating quality of iced (0°C) cod (Huss, 1976)

associated with *rigormortis*.

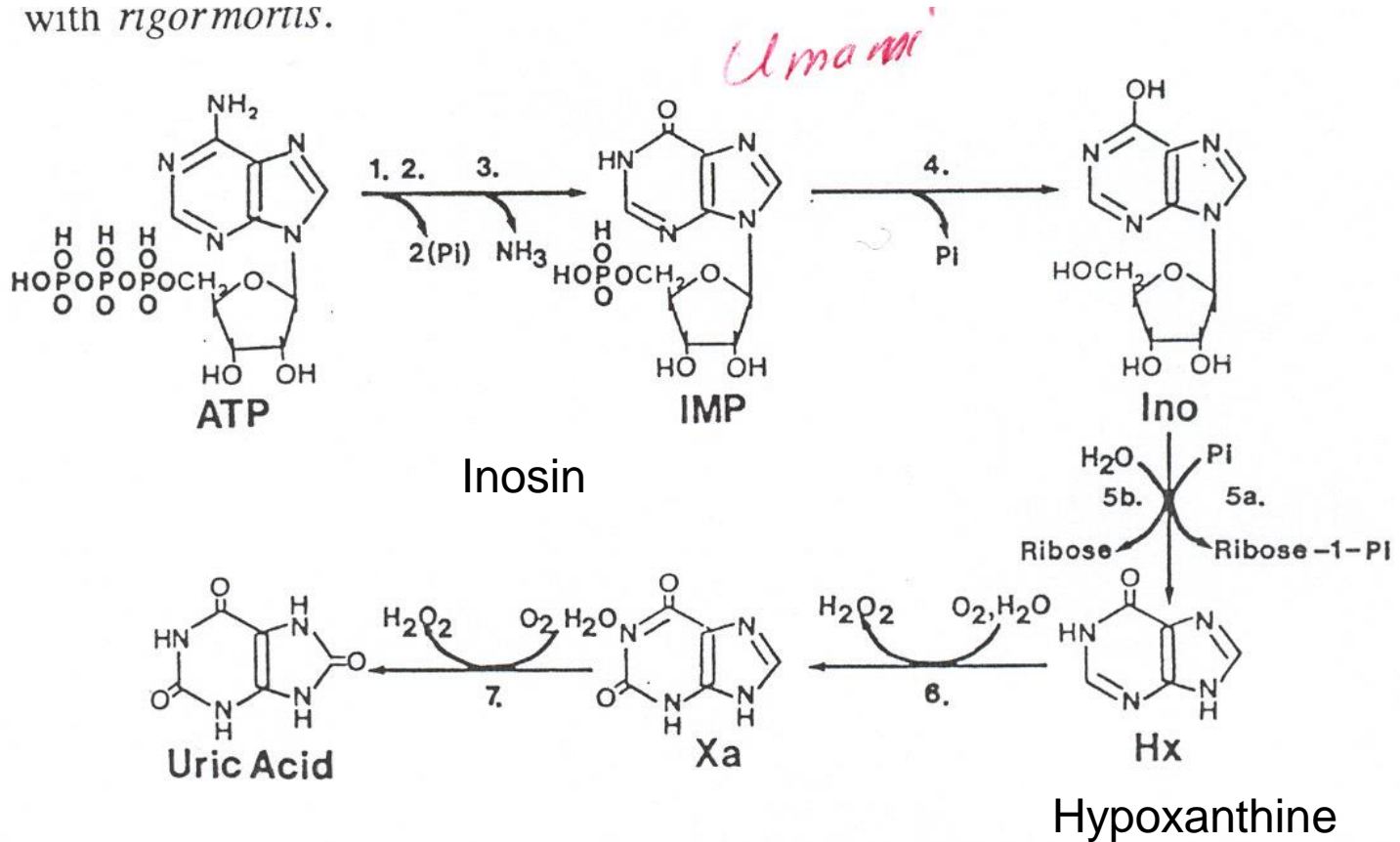


Figure 5.4 *Post mortem* ATP degradation in fish muscle. Enzymes include: 1. ATP-ase; 2. myokinase; 3. AMP deaminase; 4. IMP phosphohydrolase; 5a. nucleoside phosphorylase; 5b. inosine nucleosidase; 6,7. xanthine oxidase. Source: Gill (1992)

# Slakt, transport, foder och vatten



• LIVE CRAB & LOBSTER  
• SEA CUCUMBER MEAT

• 生猛及冰凍象拔蚌  
• 游水大肉蟹及龍蝦  
• 桂花蚌

收銀處  
CASHIER

Har även fiskdisken något att lära ?



馬交  
MARKET  
\$2.99

1.99

魚甘魚  
CAT FISH  
3.49  
/lb

白魚  
WHITE FISH  
12.99

去頭白蝦  
HEADLESS  
WHITE SHRIMP  
SPECIAL  
特價 \$4.99  
/lb

蛤蜊  
CLAMS  
7.99

\$2.49  
FRESH  
鮮  
SOUP

哈喇  
HAR LA  
2.99

將軍  
GENERAL  
\$2.99

新  
鮮  
龍蝦  
\$2.99  
/lb

新  
鮮  
魚  
桶  
\$