

# Development of the occurrence of dark spots in farmed salmon fillets

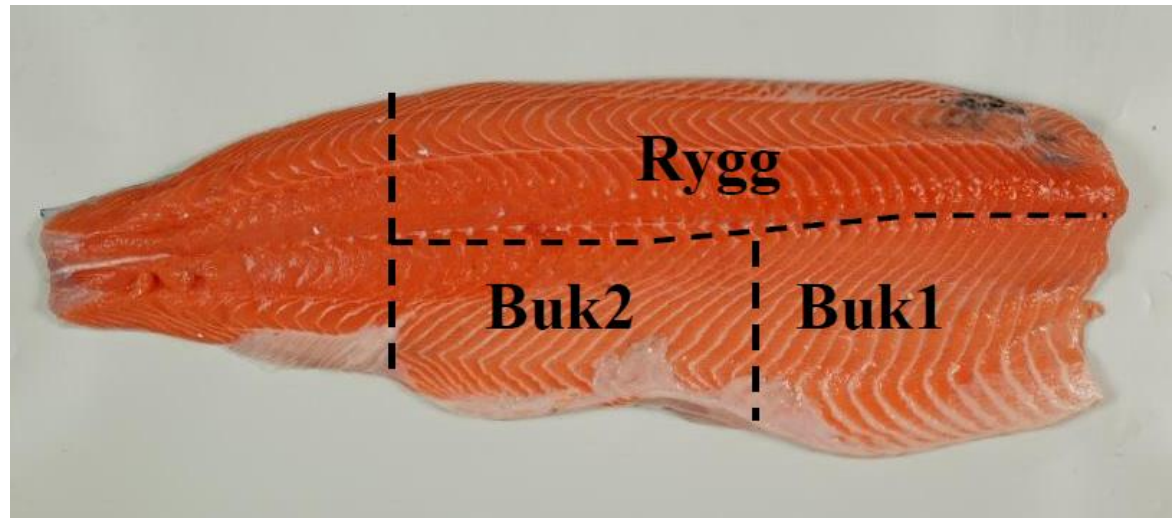
Thomas Larsson, Nofima

Melanin workshop

Clarion Hotel, Oslo Airport Gardermoen, Oct. 16th 2014

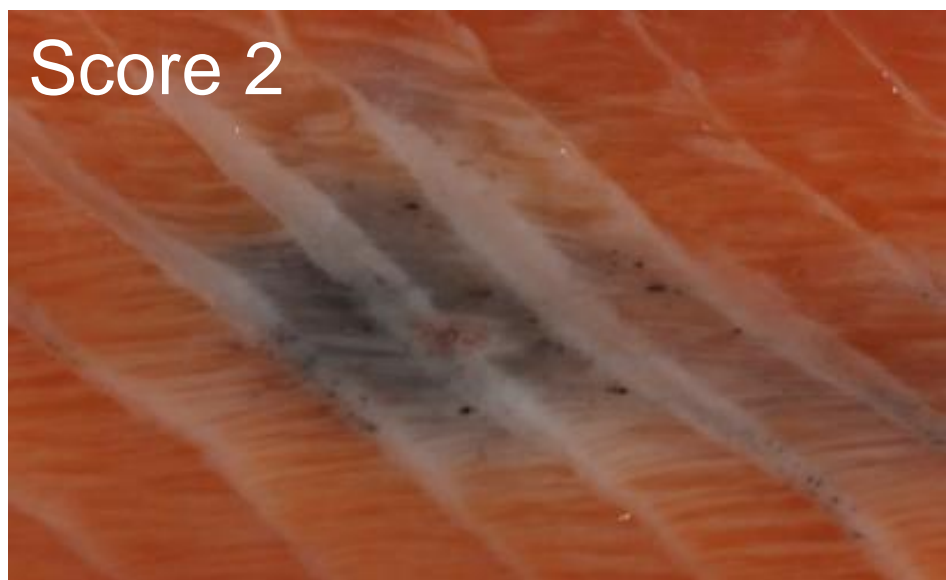
# National standard for registering occurrence of dark spots, 2010

Fillet areas



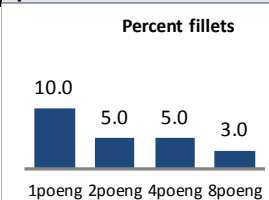
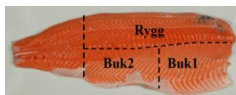
Scale

SPOTS (points)			
No discolouration	0	Spot 3-6 cm	4
Diffuse spot, all sizes	1	Area larger than 6 cm	8
Spot smaller than 3 cm	2		



# Registration form

SPOTS (points)			
No discolouration	0	Spot 3-6 cm	4
Diffuse spot, all sizes	1	Area larger than 6 cm	8
Spot smaller than 3 cm	2	Average	0.67



Fillets with spots (%)

## 22.0

**FLEKKER I FILET (poeng)**  
flere flekker i samme område summeres

Fillet	Total points	Buk 1	Buk 2	Rygg
1	1	1	0	0
2	0	0	0	0
3	2	0	2	0
4	5	4	1	0
5	0	0	0	0
6	8	0	0	8
7	0	0	0	0
8	2	0	0	2
9	3	1	0	2
10	0	0	0	0
11	4	4	0	0
12	8	0	8	0
13	1	1	0	0
14	0	0	0	0
15	0	0	0	0
16	4	4	0	0
17	0	0	0	0
18	0	0	0	0
19	1	1	0	0
20	0	0	0	0

Frivillige registreringer

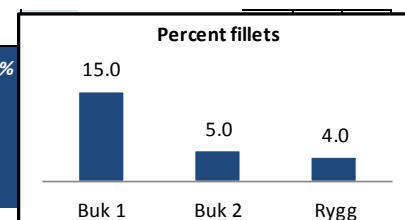
Utført: JA   
NEI

Blek, 0/1 (se fanen "Forklaring")

Gaping, 0/1 (se fanen "Forklaring")

Fillets (%)	SPOT (poeng)				Totalt %
	1	2	4	8	
Buk1	7.0	2.0	4.0	1.0	15.0
Buk2	3.0	1.0	0.0	1.0	5.0
Rygg	0.0	2.0	1.0	1.0	4.0
<b>Total %</b>	<b>10.0</b>	<b>5.0</b>	<b>5.0</b>	<b>3.0</b>	

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Comments

F. eks. om det er fisk med flere flekker innenfor samme område eller avvik for partiet (bløt filet, brus, deformiteter e.l.)

## INFORMATION FOR EACH SCORED PARTY OF FISH

Prosessanlegg navn/nr:			
Navn på bedømmer:			
Lokalitetsnr (navn):		Kvalitetsklasse:	
Dato ved slakt:	Sjøtemp:	Superior	<input type="checkbox"/>
Dato ved måling:	Merd nr:	Ordinær	<input type="checkbox"/>
Vektklasse:	Lot nr:	Produksjon	<input type="checkbox"/>

## ADDITIONAL INFORMATION

**Smolt**

Leverandør:

Utsett måned:  år:  Stamme:

Maskinvaksiner: JA  NEI  Vaksinetype:

Vaksineringstemp:

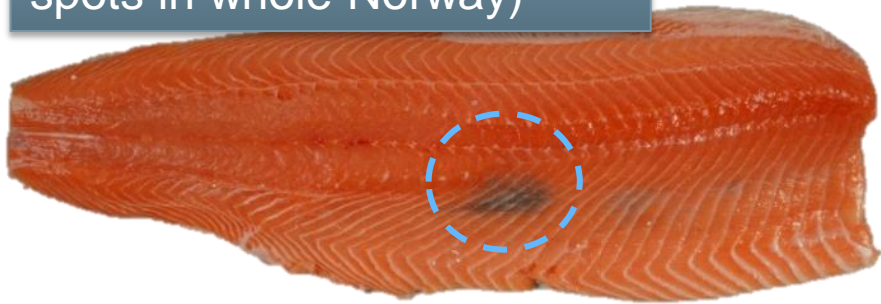
**Slaktefisk**

Sultetid, dager:  Fôrtype før slakt:

NEI  JA  NEI  DAGER

# Location of spots

More common in Southern part of Norway (27 % of all spots in whole Norway)



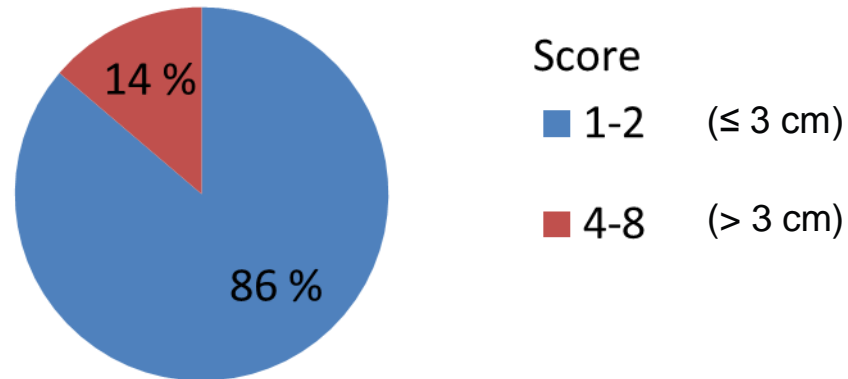
Most common (71% of all spots)



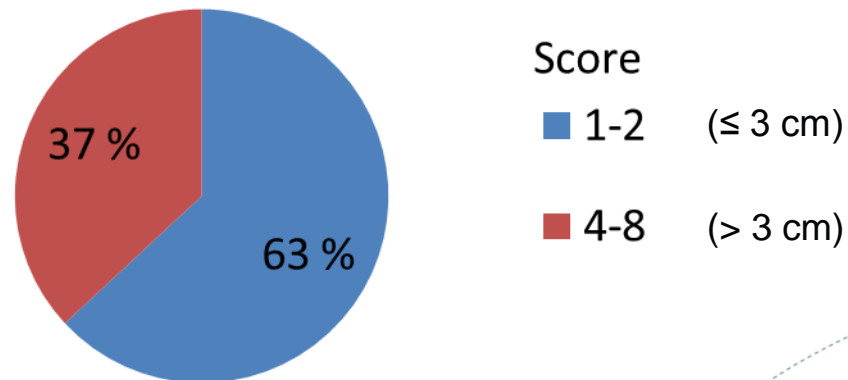
Causes largest problems (1.5 % of all spots)

# Size of spots

Abdomen, % fish per score



Dorsal part, % fish per score



# Dark spots – development

(n = 145 000; 22 – 53 000 fish per year)

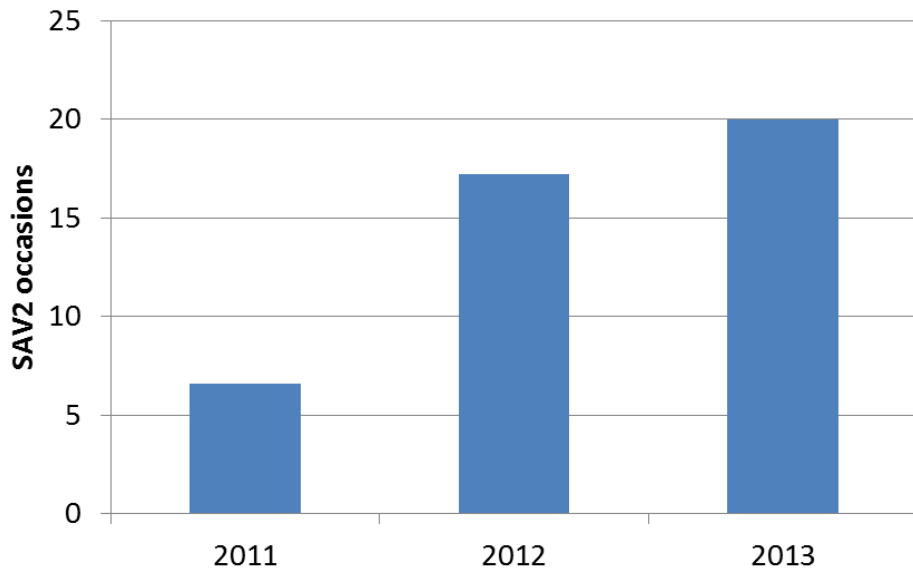
	Frequency Norway	Frequency North Norway	Frequency Mid Norway	Dorsal freq. Norway
<b>2011</b>	13 %	11 %	16 %	0.8 %
<b>2012</b>	16 %	15 %	18 %	0.9 %
<b>2013</b>	18 %	13 %	20 %	1.6 %
<b>2014</b>	19 %	13 %	24 %	1.3 %

24 % of dorsal spots in northern Norway are big (> 6 cm)  
13 % in Mid-Norway

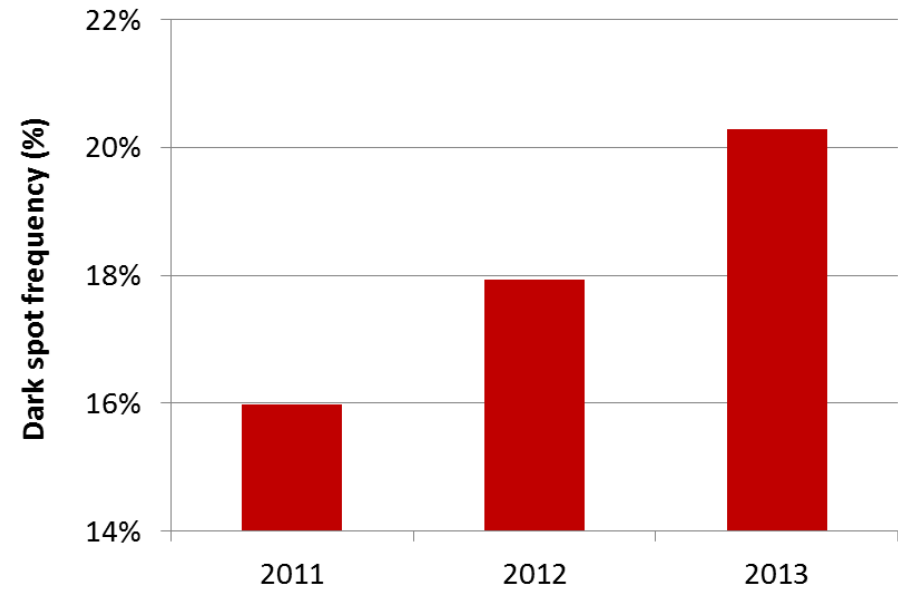
# Dark spots – development

Increase of dark spots in Mid-Norway coincide with increase of SAV2 findings

SAV2 occasions in Mid-Norway



Dark spot frequency (%) in Mid-Norway





# By the way...

- Fillets with dark spots have normal quality
  - Colour
  - Texture
  - Taste
  - Flavour
  - Composition

# Summary

- Frequency of dark spots in fillets of farmed salmon has increased from 13 % in 2011 19 % so far in 2014
  - Higher frequency of spots in dorsal muscle largely explained by increase of large spots in northern Norway
  - Yearly increase of dark spot frequency in Mid-Norway coincides with an increase in the number of SAV2 occasions
- Dark spots most frequently occur in the anterior part of the abdomen (71% of all spots on average)
- Dorsal spots are largest; 37 % of all dorsal spots have score 4 or 8
  - In the abdomen this percentage is 14 %
- There appears to be a «baseline» of dark spot frequency around 13 %

# Thank you

