The 12th Norwegian - Russian Symposium

Norway, 21-22 August 2007

Fifteen years of annual Norwegian-Russian cod comparative age readings

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The basic purpose

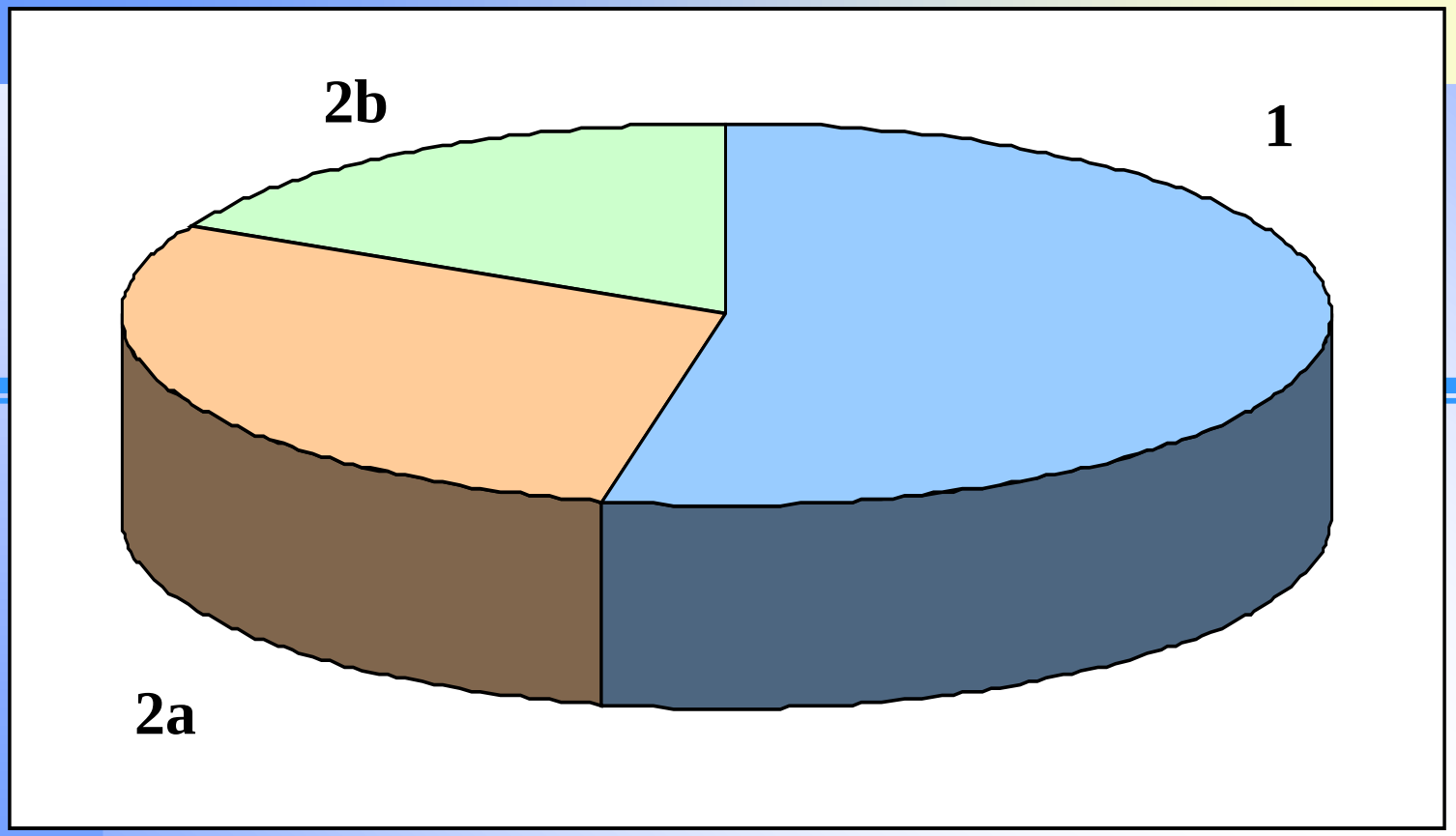
- Clear up possible reasons of age discrepancies
- Standardize methods
- Draw up recommendations in ageing
- Avoid serious errors in routine work

(discover and correct errors immediately)

Numbers of cod otoliths exchanged in 1992-2006

Year	No. of otoliths							
	Ownership		Time of year		ICES areas			Total
	IMR	PINRO	1 half year	2 half year	I	IIa	IIb	
1992	357	398	555	200	441	314	0	755
1993	200	200	200	200	205	82	113	400
1994	200	200	200	200	200	86	114	400
1995	283	209	292	200	241	74	177	492
1996	198	150	148	200	199	69	80	348
1997	193	199	238	154	243	125	24	392
1998	199	200	200	199	224	125	50	399
1999	200	200	200	200	224	125	51	400
2000	200	200	200	200	199	151	50	400
2001	200	200	200	200	193	158	49	400
2002	200	200	200	200	197	103	100	400
2003	200	200	200	200	200	113	87	400
2004	200	200	200	200	200	175	25	400
2005	200	200	200	200	250	125	25	400
2006	200	200	200	200	148	177	75	400
Total	3230	3156	3433	2953	3364	2002	1020	6386

Portions of cod otoliths sampled in different areas (1992-2006)



Cod otolith

Techniques of cod ageing: Norwegian (IMR)(N) and Russian (PINRO) (R)

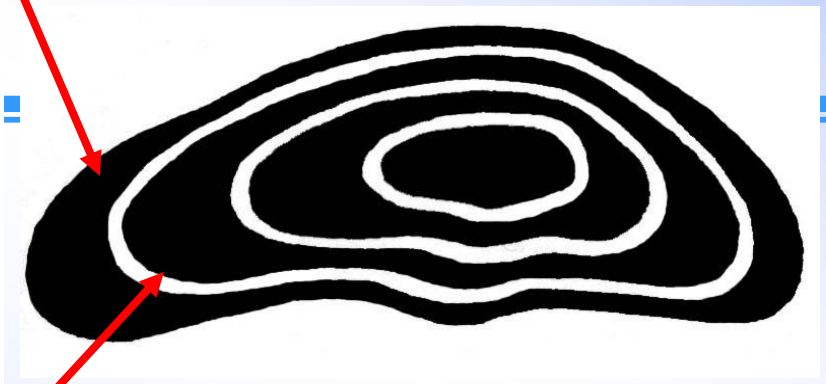
N:The opaque zone is continuous along the edge. The summer growth has ended. The zone should not be counted as an annual ring until the beginning of the next year.

Four opaque zones correspond to only three calendar years.

R:A wide opaque zone is continuous along the edge. The summer growth has ended.

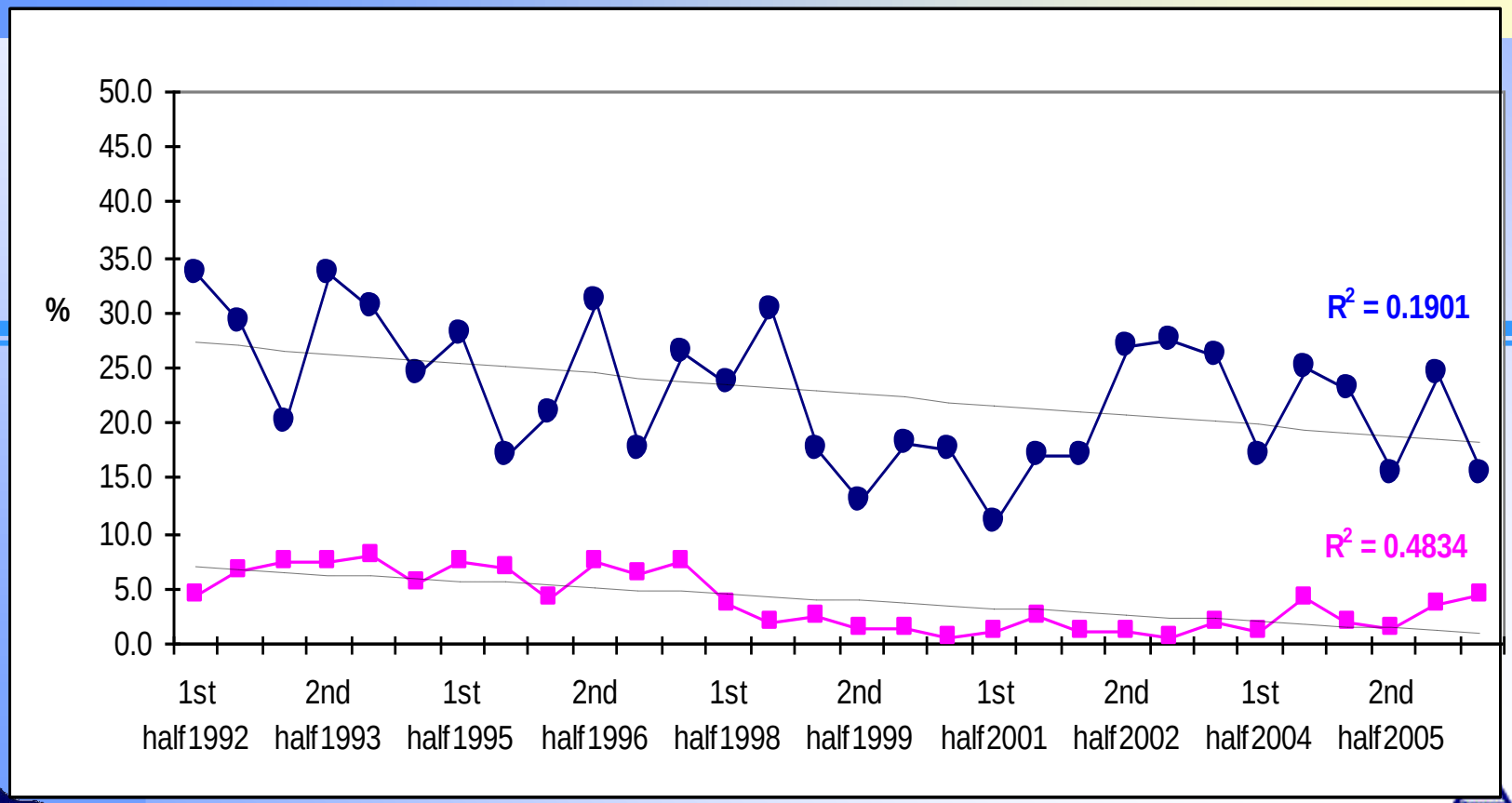
Three translucent zones correspond to three calendar years.

August-September

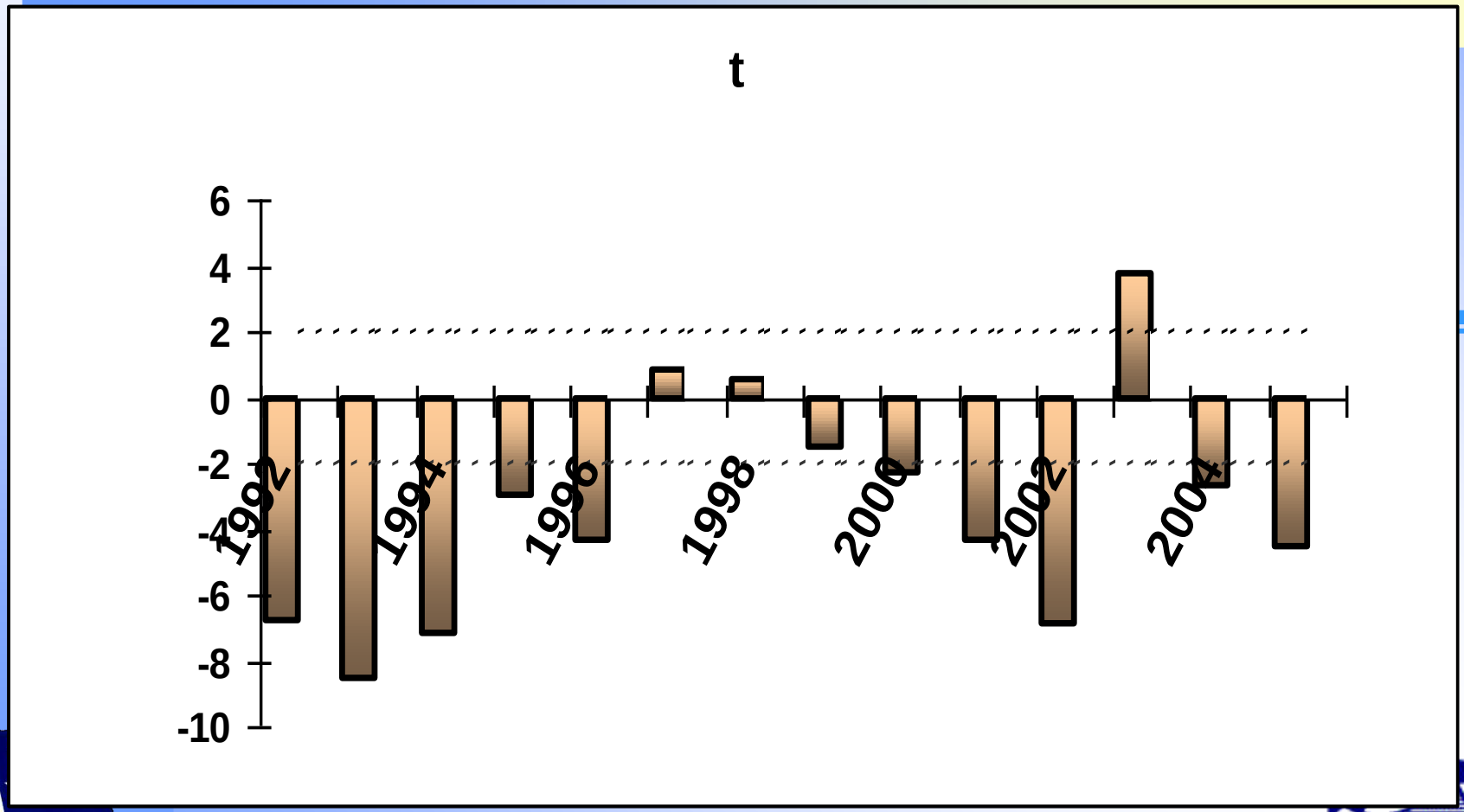


3 years

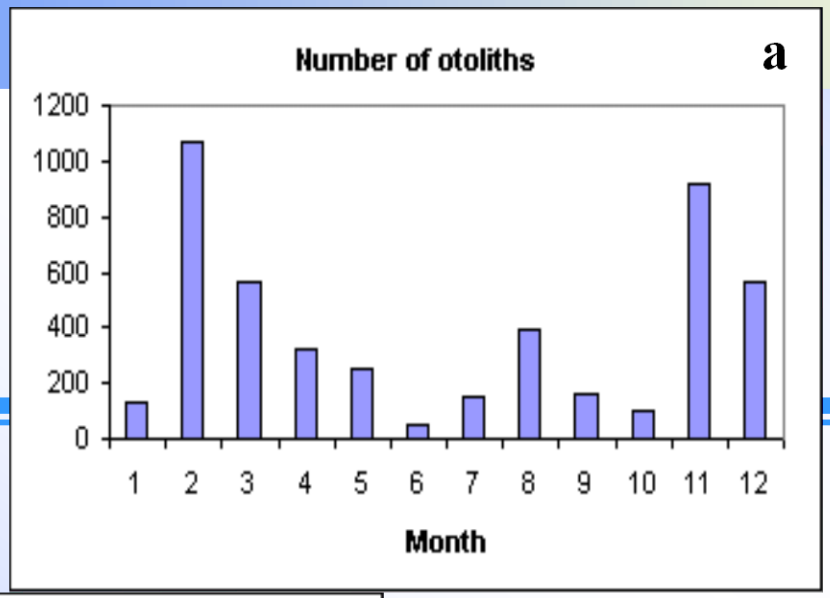
Initial discrepancy in cod age readings (dark curve) and after re-reading (pink curve)

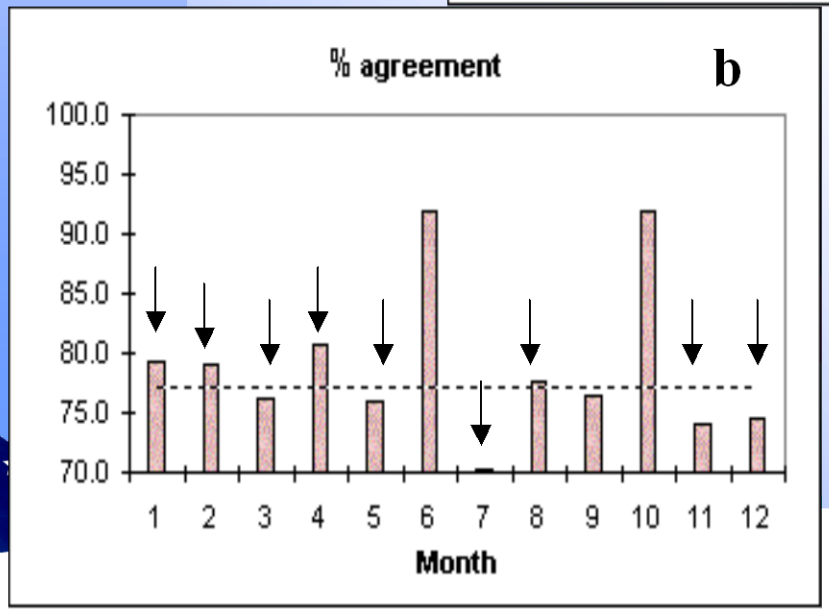


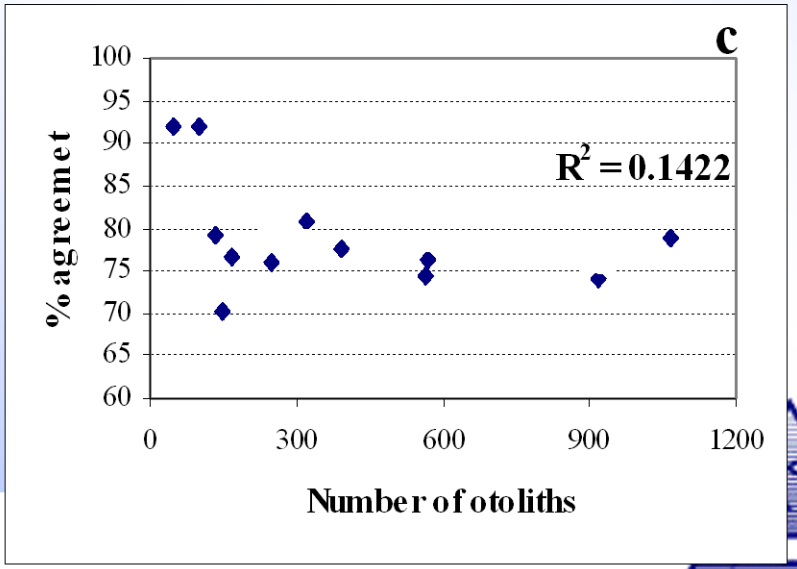
Comparison of age reading (N-R) for each year (using t-criterion for dependent samples)



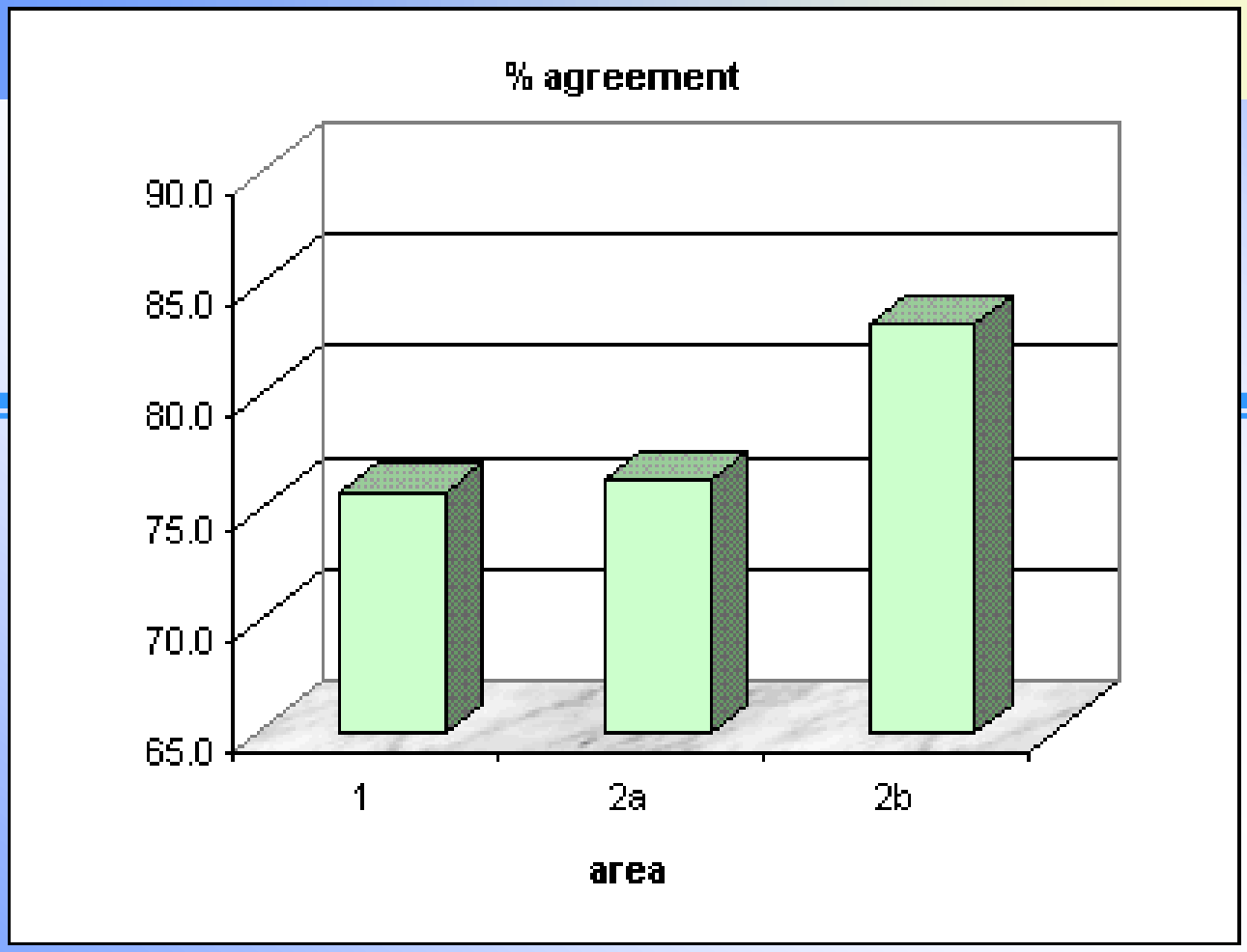
Results by months



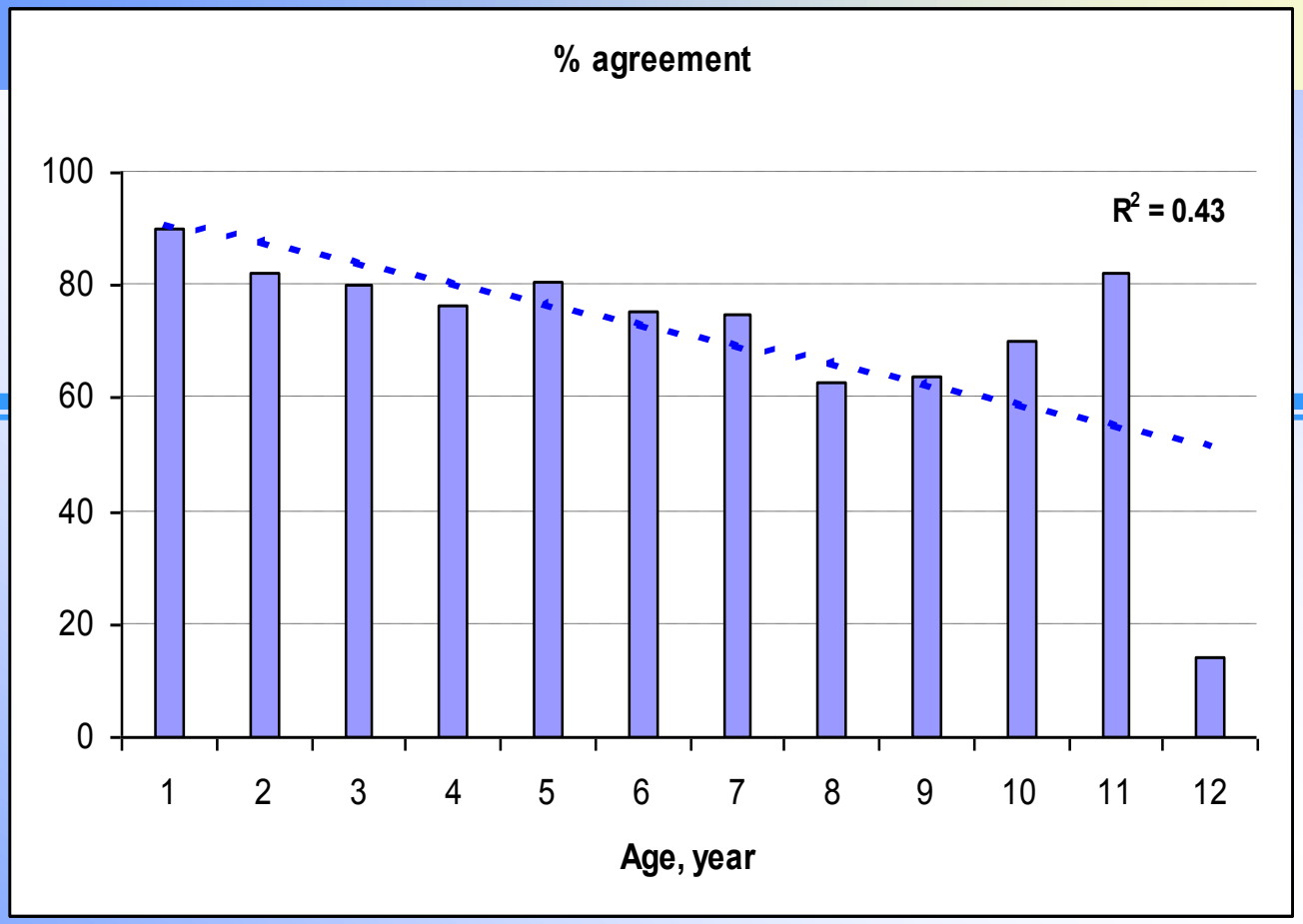




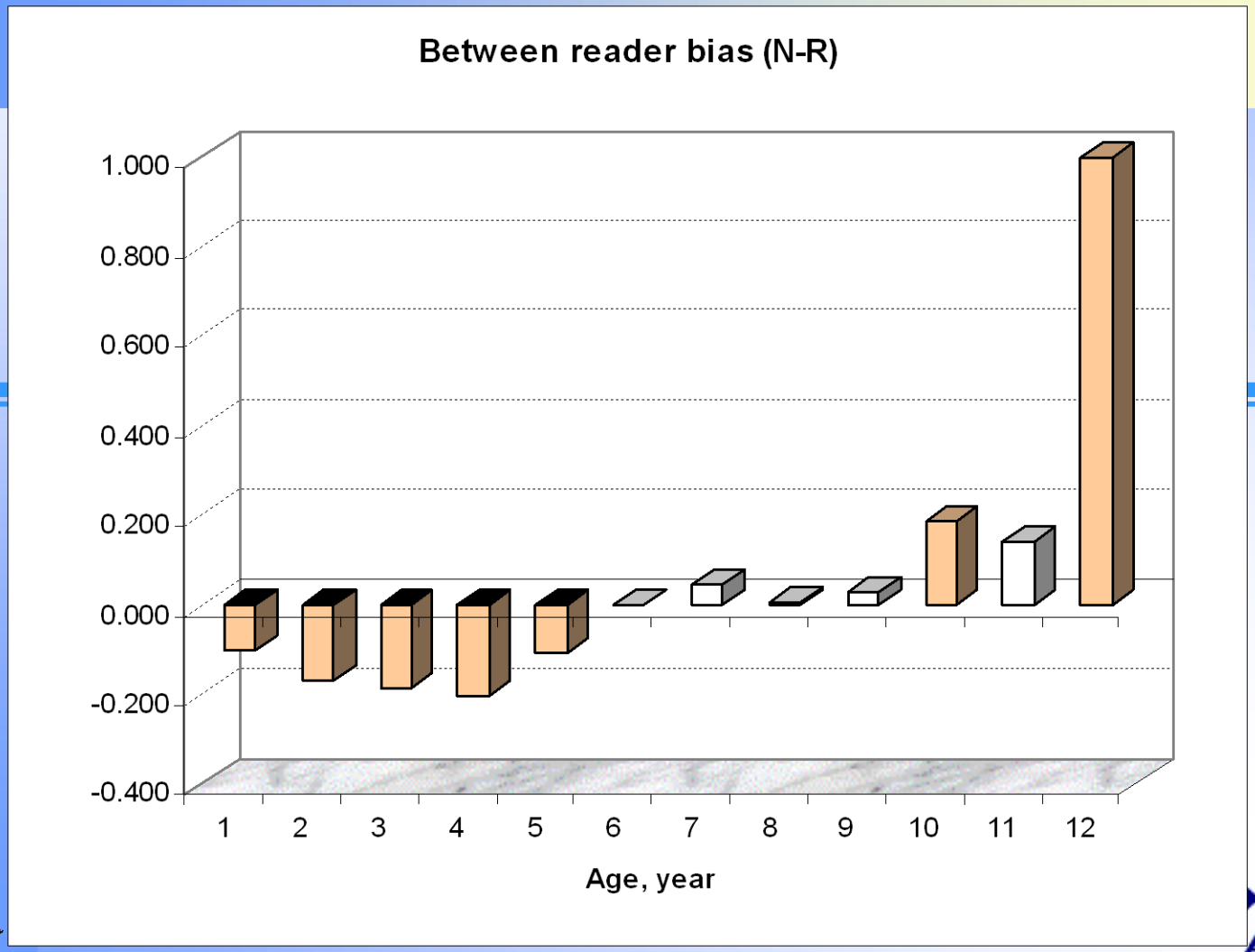
Percentage of agreement in age reading for different areas



Percentage of agreement in age reading by cod ages



Between reader bias by cod ages



Conclusions

- Equipment has been standardized
- The Labs have received important lessons (*methods, reasons of discrepancies, training procedure, need of regular meetings*)
- Differences in cod age reading between two labs have decreased

Further work

- Further analysis of data (*concerning growth rate, information on fish size, ownership of otoliths, risk analysis etc*)
- Formation of Reference collection
- Age-validation studies


Congratulations
with
15 years
anniversary !