Catch Monitoring Systems in British Columbia Groundfish Fisheries

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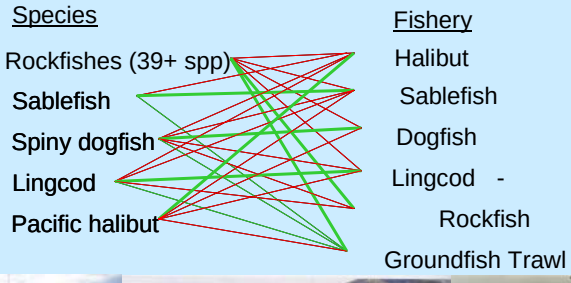
BC vs NE Groundfish Fisheries

Table 5. Comparison of Groundfish Fisheries in British Columbia and New England.

	British Columbia				New England		
	Trawl	Hake	Fixed	All Gear	Trawl	Fixed	All Gear
Vessels	57	34	244	301	420	200	643
Trips	1,153	760	1,607	3,520	10,379	8,363	18,742
DAS	5,691	2,115	12,000	19,706	23,418	9,219	32,636
Landing Ports	30	5	30	30	70	70	70
Lbs Landed	81,400,696	120,600,121	28,459,120	230,459,937	35,037,931	12,978,431	48,016,362
Catch Value	$41,299,249	$12,060,012	$85,377,360	$138,736,622	$56,018,625	$17,006,422	$73,025,047
DAS per Trip	4.85	2.78	7.47	5.60	2.26	1.10	1.74
Lbs per Trip	70,599	158,684	17,709	65,472	3,376	1,552	2,562
Catch Value per Trip	$35,819	$15,868	$53,128	$39,414	$5,397	$2,034	$3,896
Catch Value per Lb	$0.51	$0.10	$3.00	$0.60	$1.60	$1.31	$1.52

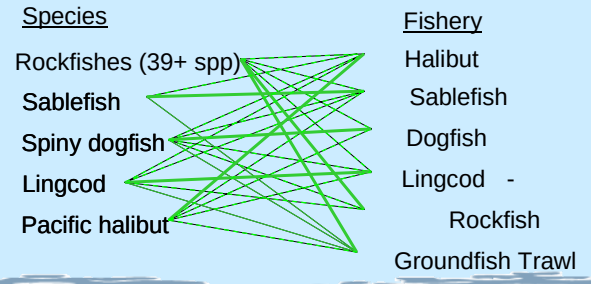
Fishery Management ~1990

Limited entry created species specific fisheries with overlapping catches (and discards)



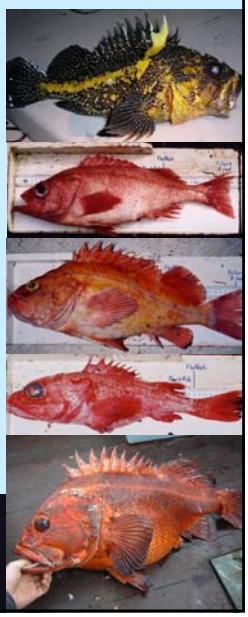
Fishery Management Today

- Phased in catch shares (IVQ's) by fishery
- Migration of the five fisheries into one 'Integrated' management plan
- Enable trading between fisheries to cover bycatch



Key Management Principles

- Account for all catch, including discards
- Stock specific management
- Require fishers to be individually accountable for their catch
- Establish new monitoring standards to ensure above principles are met



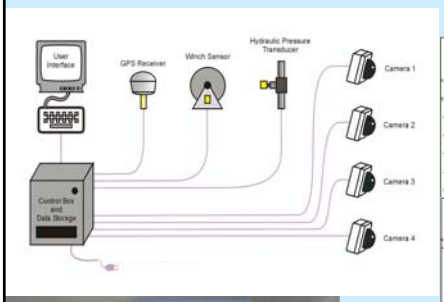
New Monitoring Standards

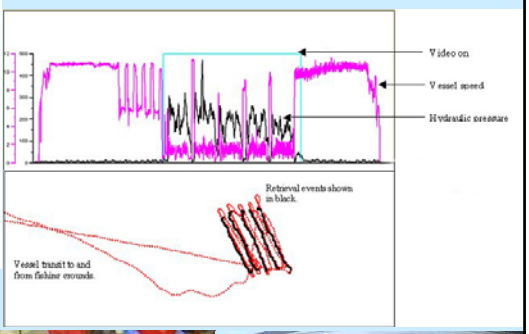
- ‘Self Reported’ Data - Logbooks, sales slips, and hails
- 100% Dockside Monitoring – Independent verification of all fish offload events (species, weights)
- 100% At-sea Monitoring – Independent verification of fishing operations (location, catch)
  - At-sea Observers (trawl fishery)
  - Electronic Monitoring (hook and line and trap fisheries)
- Data Compilation – Timely consolidation and reporting of data

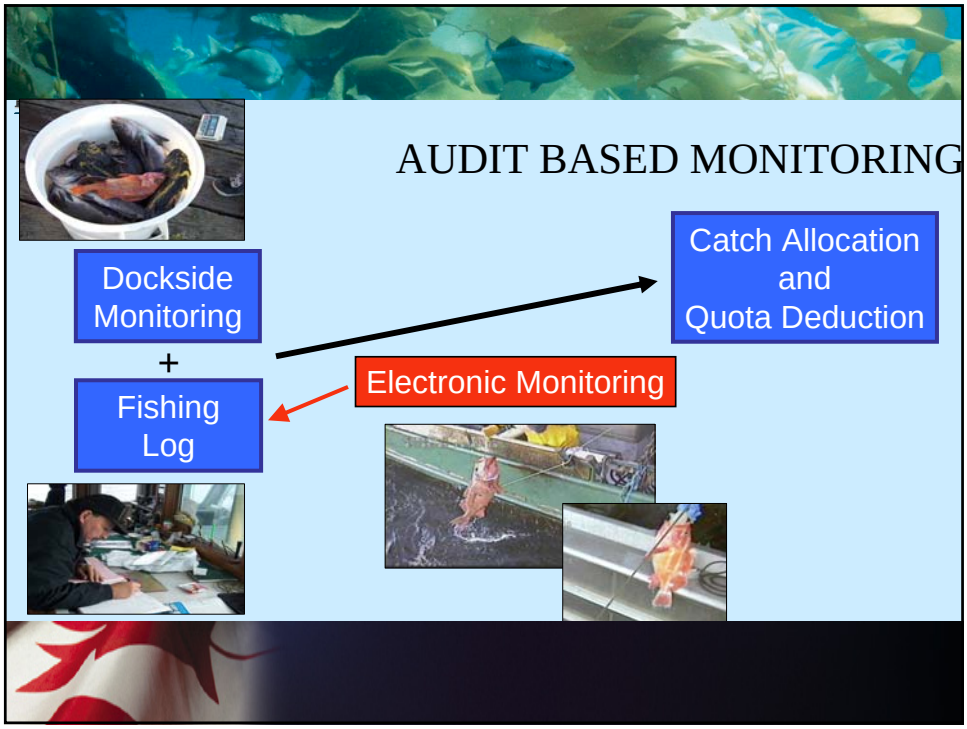
Phased Implementation

Fishery	Catch Shares	Baseline Data	Dockside Monitoring	At Sea Monitoring
Sablefish	1990	<1990	1990	2006
Halibut	1991	<1990	1991	2006
Trawl	1997	<1990	1994	1996
Zn Rockfish	2006	<1990	1995	2006
Schedule II	2006	<1990	1996	2006

Electronic Monitoring

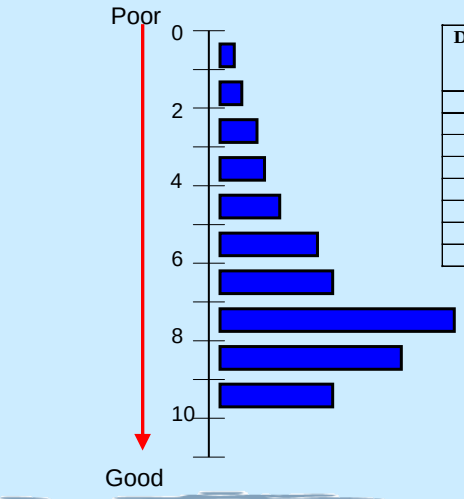






Audit Scores

Trip Score



Difference (EM – Logbook)	Difference (EM – Logbook)	Score
<30 pieces	*≥ 30 pieces*	
0-1 Piece	0-4*%	10
2-3 pieces	5-10 %	9
4-6 Pieces	10-20%	8
7-12 Pieces	20-30%	7
13-15 Pieces	30-40%	5
14-18 Pieces	40-50%	3
19-30 Pieces	> 50%	0

The Matrix

Trip Scores \ Annual Scores	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	Total	Percent
0-1	0	1	0	2	3	4	5	7	4	1	27	1.8%
1-2	0	0	0	2	2	6	5	2	2	1	20	1.3%
2-3	0	1	0	1	5	2	6	4	9	0	28	1.8%
3-4	0	0	1	2	5	3	4	7	9	2	33	2.2%
4-5	0	0	0	2	5	6	6	6	5	3	33	2.2%
5-6	0	0	2	2	5	7	14	16	13	6	65	4.3%
6-7	0	0	1	0	6	7	14	24	32	8	92	6.0%
7-8	0	0	1	4	8	20	25	51	78	26	213	13.9%
8-9	0	1	2	5	15	18	39	88	264	163	595	39.0%
9-10	0	1	0	1	3	3	24	47	179	163	421	27.6%
Total	0	4	7	21	57	76	142	252	595	373	1,527	100.0%
	0.0%	0.3%	0.5%	1.4%	3.7%	5.0%	9.3%	16.5%	39.0%	24.4%	100.0%	

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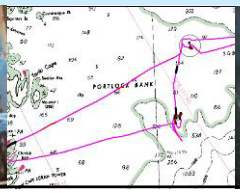
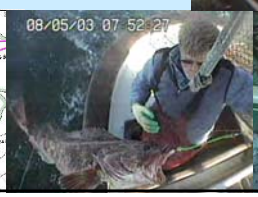
Fisher logs = DMP = VF expanding 10% sampling data

Sector	Total piece counts		
	VF estimate	Fisher logs	DMP
Halibut (Outside)	34,547	39,880	39,988
Halibut/Sablefish (Outside)	11,144	10,411	10,128
Lingcod (Outside)	2,310	2,008	2,056
Rockfish (Inside)	536	554	519
Rockfish (Outside)	16,991	14,159	14,063
Sablefish (Outside)	359	292	304
Dogfish (Inside)	1,282	1,581	1,563
Dogfish (Outside)	4,496	3,499	3,531
Outside	69,847	70,249	70,070
Inside	1,819	2,135	2,082
Coastwide	71,666	72,384	72,152

Primary Outcomes

- Full catch accounting
- Individual accountability
- Stock specific management
- Fishers became motivated to reduce bycatch, fish selectively, and report accurately
- Cost efficient monitoring system (~5% GFV)



Other Outcomes

- Industry became more involved in data collection, problem solving, and science (surveys and assessments)
- Levelled the playing field
- Trusted data rich fishery information system
- Improved economics and safety



Key Success Factors

- Industry leadership
  - 'Owning the Problem'
  - Co-funding with government
  - More industry say in the program
- Recognized need for 'refereed' process
- Privatized monitoring service
- Industry felt the program was credible
- Administrative/legal penalties

Catch Shares and Monitoring Systems Which Goes First?

- Strong monitoring systems enable catch shares
- Catch shares helped align the objectives between industry and fishery managers, enabling implementation of monitoring systems.
- The product is greater than the sum of the parts

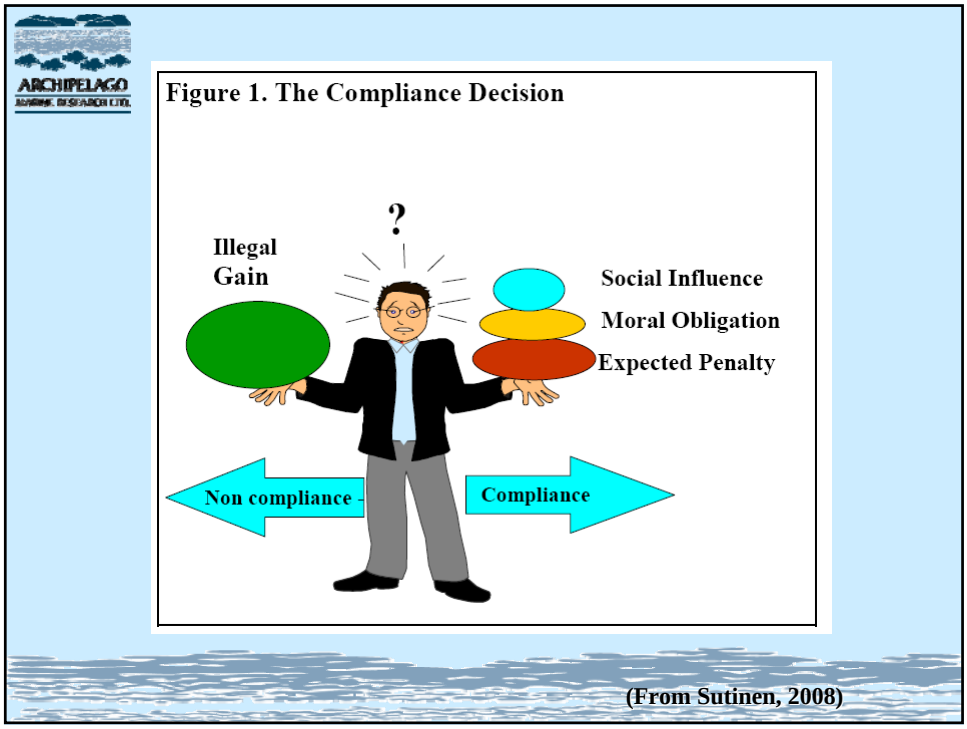


Figure 1. The Compliance Decision
?
Illegal
Gain
Social Influence
Moral Obligation
Expected Penalty
Non compliance
Compliance
(From Sutinen, 2008)


Thanks!

Groundfish Fisheries in British Columbia, Canada

- ~ 60 different TAC managed groundfish stocks
- >120 fish species
- ~105,000 mt (~$140m)
- ~300 vessels (4-40m LOA)
- 3,500 trips/ 20,000 fishing days
- Coast wide and year round

Trip and Annual Scores