

Sector Monitoring Program At-Sea Monitoring & Sector Manager Tool



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Sector Management Priorities

- Socio-economic decisions made by the self-defined community.
- Quotas set by best available science to control mortality and restore stocks.
- Increased accountability and monitoring.
- Real-time reporting, analysis, and management.

Need

Accurate, timely, and transparent monitoring of landings and discards

Problem

Additional monitoring is necessary for a network of 19 sectors to work successfully.

Solution

CCCHFA developed internal sector monitoring program in 2007

GOALS of Sector Monitoring Program

1. Accurately and transparently quantify catch (landings and discards) in a timely manner
2. Generate high rates of coverage in order to increase certainty of the most accurate and necessary rates of coverage
3. Refine and develop a protocol that meets Goal #1 in a way that doesn't impair fishing abilities
4. Generate fisherman buy-in and investment, to meet Goals #1 and #2
5. Generate "comfort" with the inconvenience of having data collectors on vessels
6. Identify and prioritize data collection based on goals of the program
7. Analyze differences in discard rates between sector data collection, VTR-reported discards, and NEFOP-reported discards
8. Deploy, analyze, and confirm abilities and inabilities of EM
9. Enforce Sector and other regulations

Results of First Two Years

At Sea Data Collection

- 2007: 19% coverage (120)
- 2008: 23% coverage (232)

Cod Estimated Discards

VTR	FOP	SDC
84,183	128,103	143,434

Electronic Video Monitoring

- Species identification possible on LLB & GNS
- Requires adjustment of on-deck fish handling in order to quantify discards

Results of First Two Years

- Fishermen's investment in developing a workable solution
- Robust set of performance and enforcement data
- Produced the following documents:
 - Gillnet catch monitoring protocol
 - Hook catch monitoring protocol
 - Monitoring contract btwn fishermen and Sector
 - Confidentiality form
- Next steps: standardizing protocols and requirements through NEFOP's at sea catch monitoring pilot and electronic monitoring pilot



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Fishing Year 2008 Monthly Aggregate Report

Initial Monthly Quota: 262,734 lbs

Report run on:
 For Data reported through:
 Annual Quota:
 Annual Quota Remaining:

4/7/2009
 3/31/2009
 3,152,802 lbs
 1,860,300 lbs

Observed Trips: March
 Federal 14%
 Sector 5%

GEORGES BANK COD

Month	KEPT (dealer)		DISCARD			CATCH			Adjusted Monthly Quota Available (remaining previous month plus initial)			Monthly Quota Remaining (includes adjustment)			Cumulative Annual Catch							
	Rep.	Converted	Rep.	Sector Est	Federal Est	Rep.	Sector Est	Federal Est	Rep.	Sector Est	Federal Est	Rep.	Sector Est	Federal Est	Rep.	Sector Est	Federal Est	Rep.	Sector Est	Federal Est		
	lbs (Hail Wt)	lbs (Rd Wt)	lbs (Rnd Wt)	lbs (Rnd Wt)	lbs (Rnd Wt)	lbs (Rnd Wt)	lbs (Rnd Wt)	lbs (Rnd Wt)	lbs (Rnd Wt)	lbs (Rnd Wt)	lbs (Rnd Wt)	lbs (Rnd Wt)	lbs (Rnd Wt)	% of quota	% of quota	% of quota						
May-08	23,394	27,371	2,432	4,709	3,832	29,803	32,080	31,203	262,734	262,734	262,734	232,931	230,653	231,531	29,803	32,080	31,203	0.9%	1.0%	1.0%		
Jun-08	161,322	195,372	2,526	3,898	11,373	197,898	199,270	206,745	495,664	493,387	494,264	297,766	294,117	287,519	227,701	231,350	237,948	7.2%	7.3%	7.5%		
Jul-08	223,446	268,546	13,433	29,786	37,194	281,979	298,332	305,740	560,499	556,850	550,253	278,520	258,518	244,513	509,680	529,682	543,688	16.2%	16.8%	17.2%		
Aug-08	95,442	114,165	11,901	21,998	7,116	126,066	136,163	121,281	541,254	521,252	507,246	415,188	385,089	385,965	635,746	665,845	664,969	20.2%	21.1%	21.1%		
Sep-08	68,124	81,263	7,970	15,942	5,583	89,233	97,204	86,846	677,921	647,822	648,699	588,689	550,618	561,853	724,979	763,050	751,815	23.0%	24.2%	23.8%		
Oct-08	170,469	201,760	17,502	32,171	33,085	219,262	233,932	234,845	851,422	813,351	824,586	632,160	579,419	589,741	944,241	996,982	986,660	29.9%	31.6%	31.3%		
Nov-08	206,686	246,496	20,647	24,811	20,669	267,143	271,307	267,165	894,893	842,153	852,475	627,750	570,846	585,309	1,211,384	1,268,288	1,253,825	38.4%	40.2%	39.8%		
Dec-08	27,442	32,513	4,166	1,528	4,489	36,679	34,041	37,002	890,484	833,580	848,043	853,805	799,539	811,041	1,248,063	1,302,329	1,290,827	39.6%	41.3%	40.9%		
Jan-09	32,155	37,843	2,995	8,674	2,995	40,838	46,518	40,838	1,116,538	1,062,272	1,073,774	1,075,700	1,015,755	1,032,936	1,288,902	1,348,847	1,331,666	40.9%	42.8%	42.2%		
Feb-09	2,052	2,401	86	538	937	2,487	2,939	3,338	1,338,433	1,278,488	1,295,669	1,335,947	1,275,549	1,292,332	1,291,388	1,351,786	1,335,003	41.0%	42.9%	42.3%		
Mar-09	941	1,101	13	13	285	1,114	1,114	1,386	1,598,680	1,538,283	1,555,065	1,597,566	1,537,169	1,553,680	1,292,502	1,352,900	1,336,389	41.0%	42.9%	42.4%		
Apr-09									1,860,300	1,799,902	1,816,413											
TOTAL	1,011,473	1,208,831	83,671	144,068	127,557	1,292,502	1,352,900	1,336,389														

Sector Manager Tool Goals

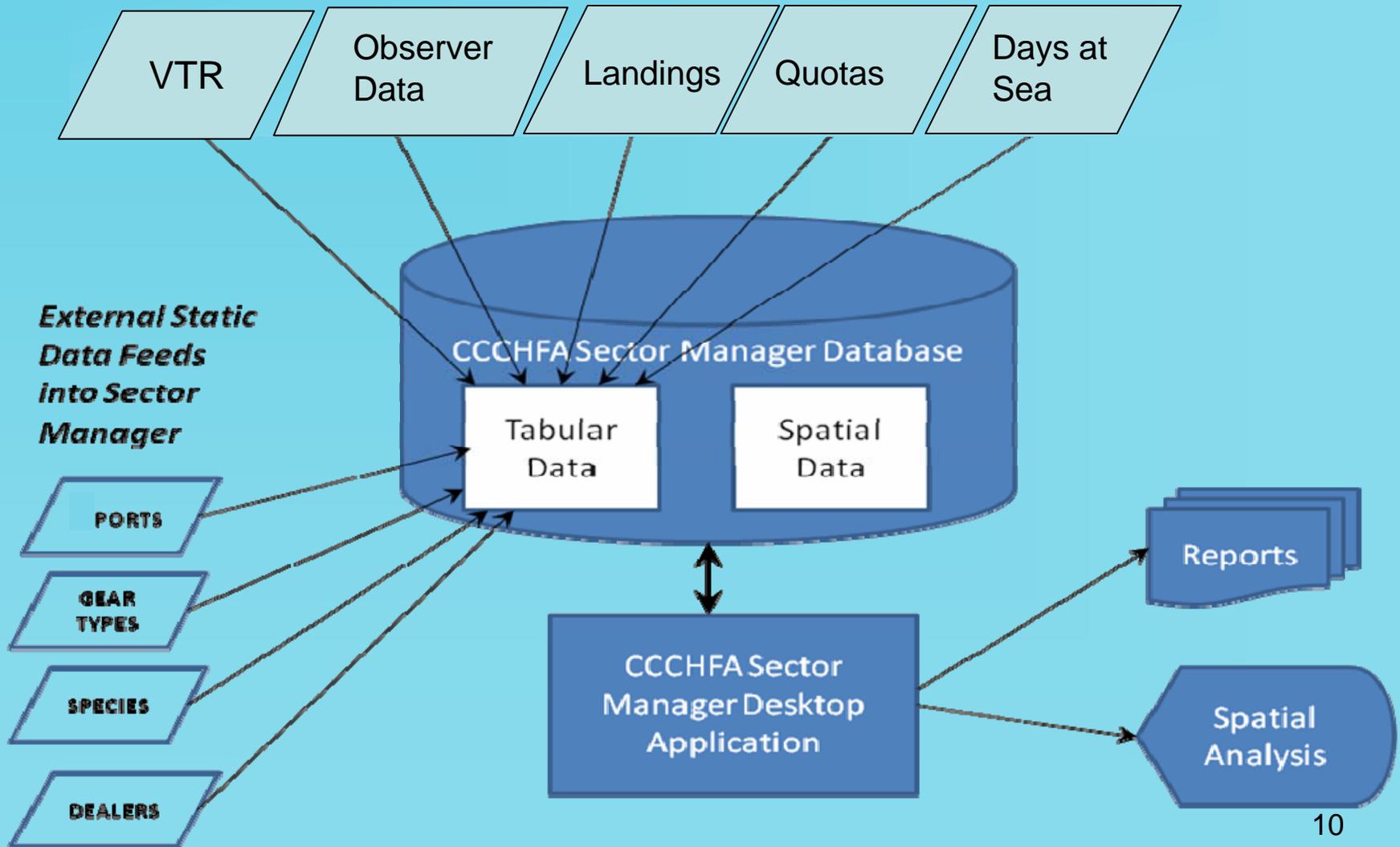
- Compile and link multiple data streams
- Analyze data and track quotas for all stocks
- Compute estimated discards
- Generate reports for NMFS
- Generate reports for Sector Members
- Perform on-the-fly data queries
- Map effort, catch, and species interactions
- Utility for ALL Sectors

Technical Details

- Development Environment
 - Forms: Winforms, a .NET API
 - Reports: Crystal Reports Library
 - Mapping: ArcObjects from ESRI (*requires either ArcEngine Runtime or ArcGIS Desktop license \$600*)
- Back End: MS SQL Server
 - Compatible with Enterprise or Express (*free*)
 - Support Local PC or network installation
 - Remote access possible
 - Database schema mimics FLDRS

Data Flow

External Dynamic Data Feeds into Sector Manager



Outstanding Data Functionality

- Dockside monitoring
- At sea monitoring (video, if applicable)
- Assumed discard rates
- Transfer of Quota
- Test applicability to trawl gear data

Reporting Functionality

- Monthly or weekly quota reports for NMFS (landings, discards, total catch, quota remaining, etc).
- Summary of quota available for all stocks within the Sector
- Individual vessel monthly details (# trips, # observed, DAS used, protected species interactions)
- Discard Details (by vessel, by trip, by species)
- Protected Species Interactions (by trip, by species)
- Infractions Report (internal Sector infractions)
- DAS used/remaining for each vessel

Outstanding Reporting Functionality

- SAP Reports
- Soak Time Report
 - Correlation with discards
- Finalize calculations
- Exports of data for NMFS

Mapping Functionality

- Fishing locations for sector aggregated into 10 minute grid cells for analysis and display.
- The user selects date filter – day, week, month, quarter, fishing year
- “Hotspot analysis”
 - Trip Analysis breaks down trip counts and days at sea used per grid cell
 - Effort analysis shows
 - Weights (catch, landing, or discard), by species and/or gear
 - Species Co-Occurrence
 - Gear Quantity
 - CPUE- currently weight/soak time or weight/gear quantity

Outstanding Mapping Functionality

- Report lat/long for selected areas
- Model environmental variables with protected species interactions
- Intersect enforcement violations with fishing effort

Q&A

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**[http://www.smartgrowthtools.org/ebmtools/
index.php](http://www.smartgrowthtools.org/ebmtools/index.php) **link to full demo***

**[http://mgel.env.duke.edu/proj/mebm/funded-
projects/ccchfa/index_html](http://mgel.env.duke.edu/proj/mebm/funded-projects/ccchfa/index_html)**