

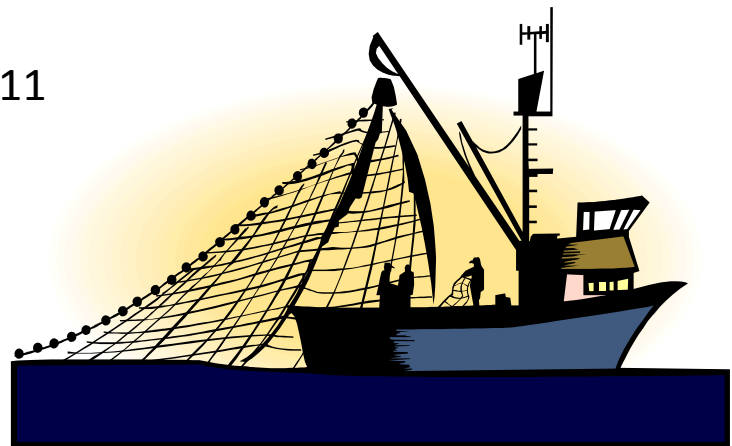


# Coastal Geo Tools 2011

## Tools for Fisheries Management

Sector Manager:  
A tool for fisheries to manage quotas

March 2011



# History: Sector Manager

- NOAA's National Marine Fisheries Service (NMFS) determines allocation quotas

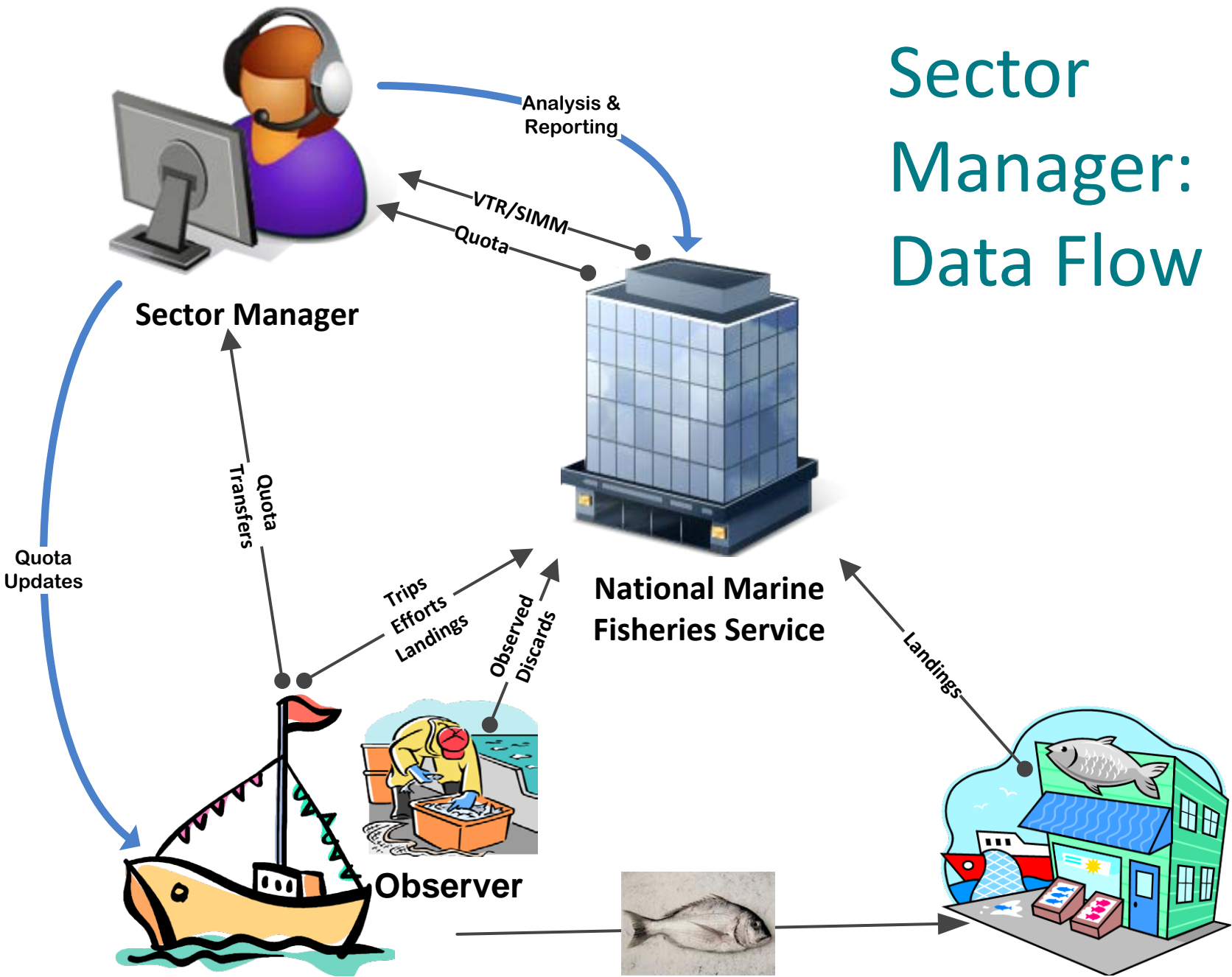
## By species, by sector

- Sectors are associations of fishing vessels
- Sectors allocate species quota to vessels
- Sectors manage allocation transfers
  - Vessel to vessel transactions
  - External sector to sector transactions

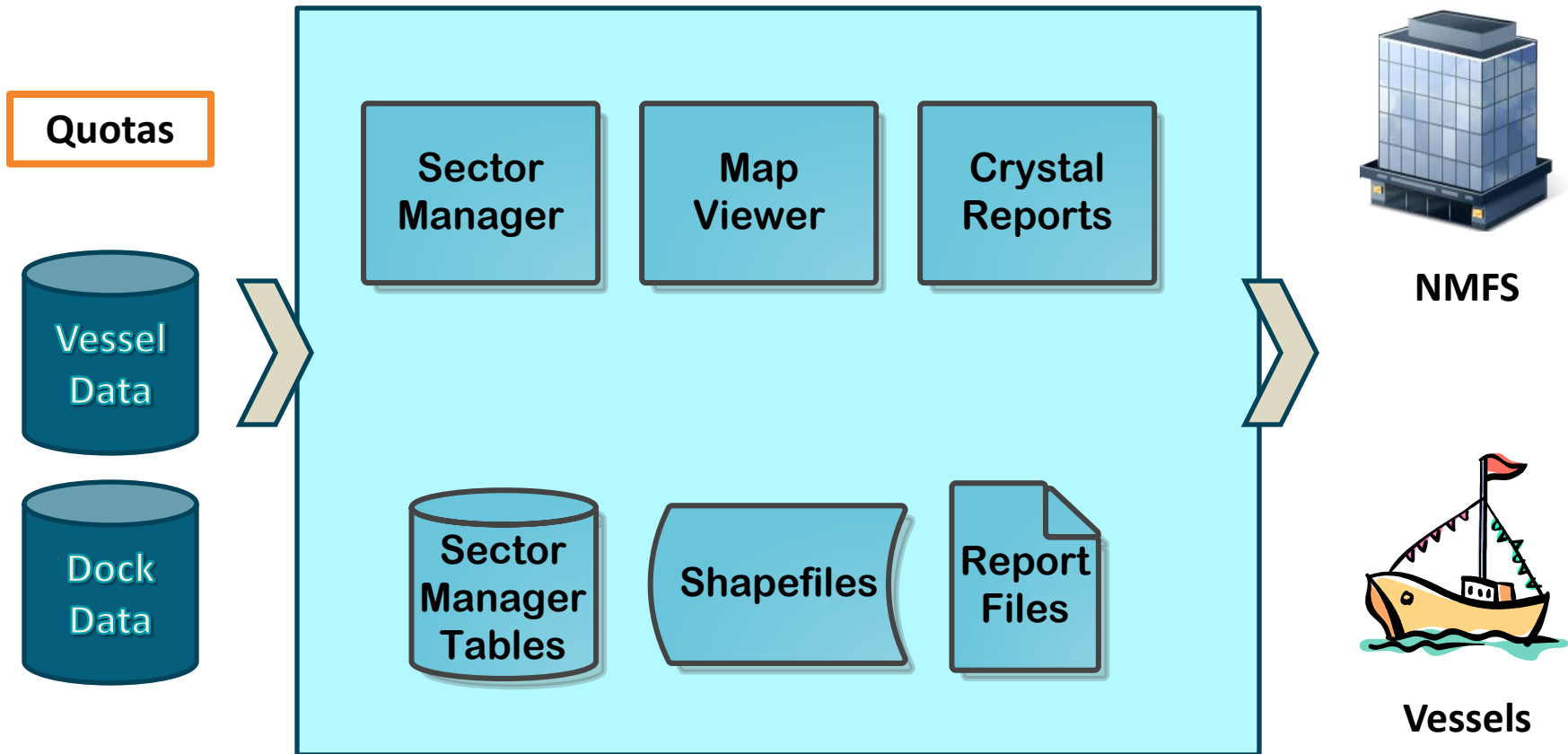
# History: Issues

- “Days at Sea” model end-of-life
- Sensitivity to impact on fishing communities
- Implemented by Hook Sector (CCCHFA) 5/1/2010
- Monthly production reporting to NMFS
- Quotas are a new model for everyone
- System used to determine remaining 2010 quota
- Not all requirements defined prior to development
- Not agile, no specification, 2007 legacy system

# Sector Manager: Data Flow



# Technology: Building Blocks



# Technology: Technical Details

## Desktop single user application

### Development Environment

- **Forms:** Winforms, .NET API
- **Reports:** Crystal Reports Library
- **Mapping:** ArcObjects from ESRI

Requires either ArcEngine Runtime or ArcGIS Desktop license

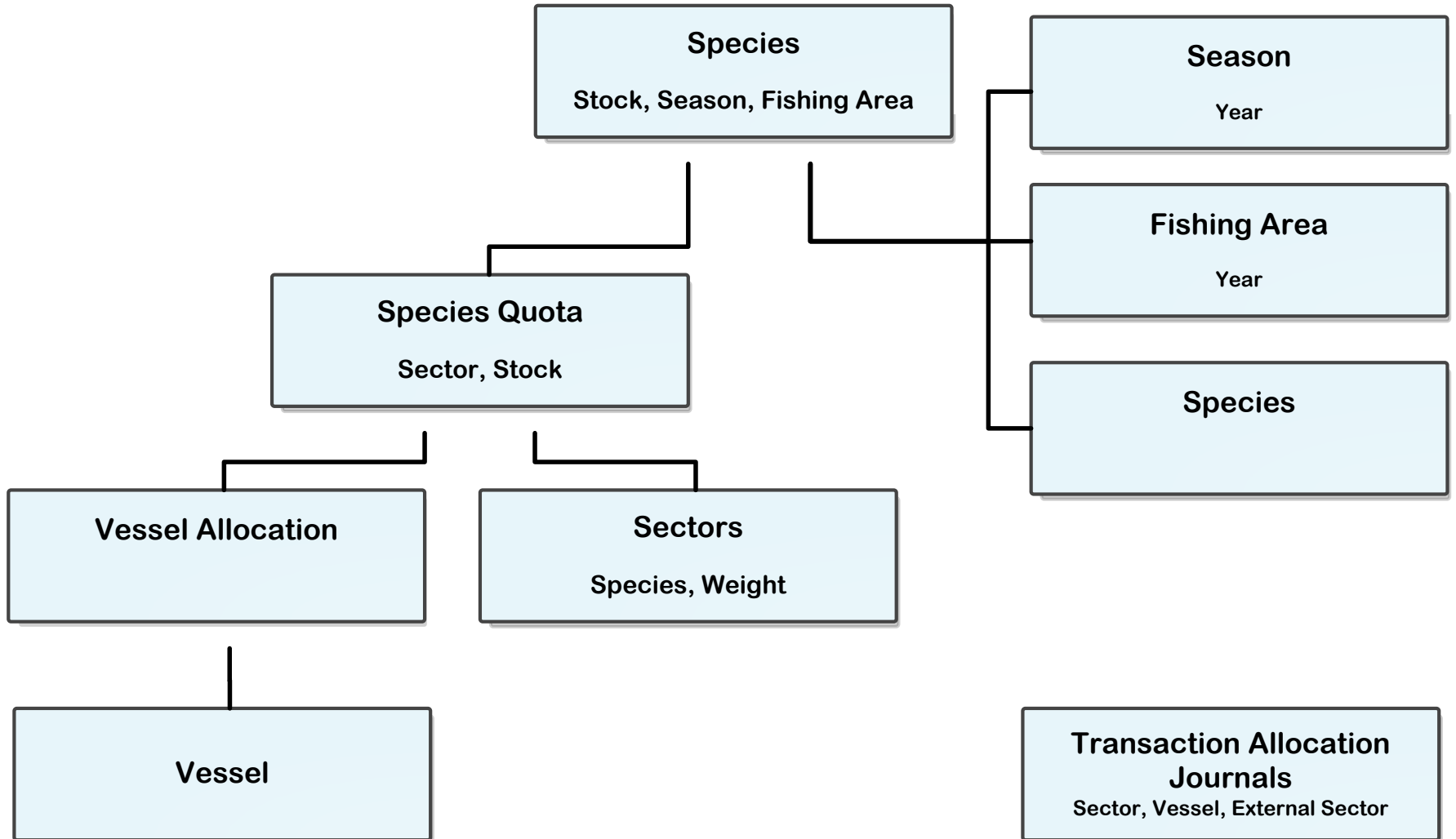
### Back End: MS SQL Server

- Compatible with Enterprise or Express (free)
- Support Local PC or network installation
- Remote access possible

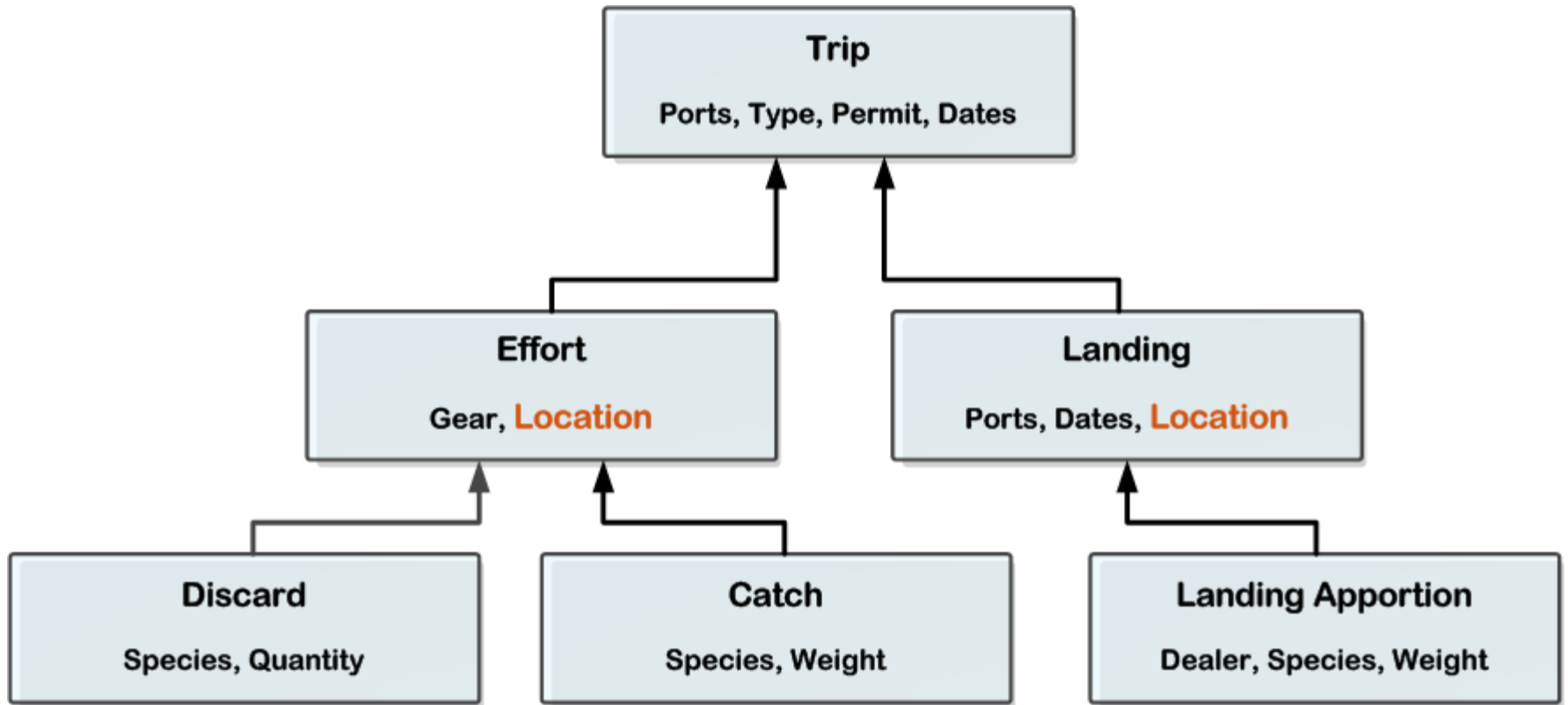
# Sector Manager: Key Inputs

Information Source	Content
Vessel Trip Report (VTR)	Trip Data (vessel info, days at sea, ports)
VTR	Effort Data (catch location, species)
VTR	Landing Data (vessel)
Sector Information Management Module (SIMM)	Dealer Landings (dock)
SIMM	Discard Rate (assumed, used when no observations)
SIMM	Observed Discards (actual by onboard observers)

# Quota Data



# Fishing Data



Sector Manager User Interface

Building Blocks:

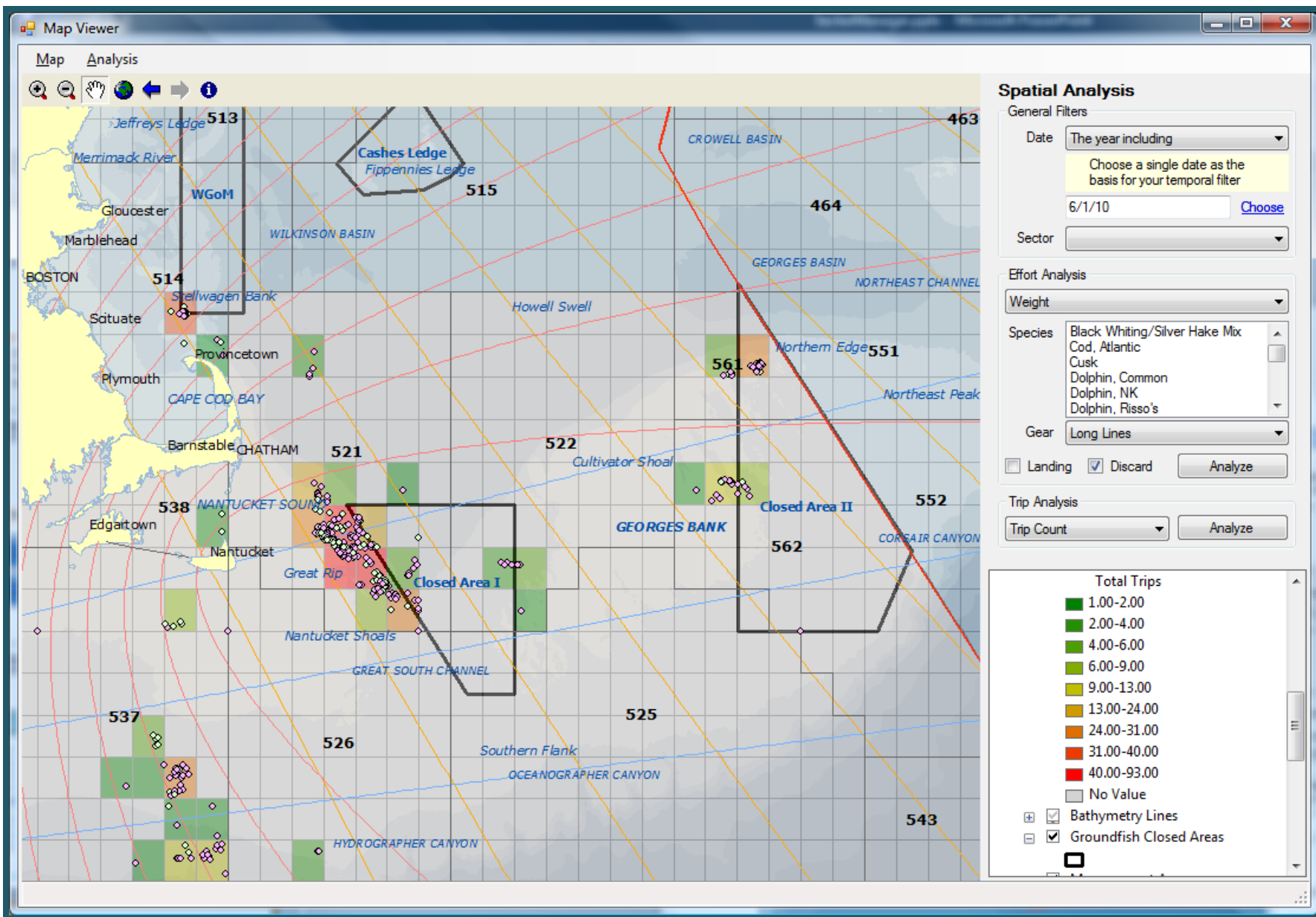
The screenshot shows the Sector Manager application window. The title bar reads "Sector Manager". The menu bar includes "File", "Configuration", and "Fishing Year 2010". On the left, there are buttons for "Manager", "Trips", "Map Viewer", and "Data Import". The "Trip Filters" section includes a "Sector" dropdown set to "Fixed Gear Sector", a "Vessel Name" dropdown, and "Sailed On or After" and "Sailed Before" date fields. There are checkboxes for "Observed" and "Missing Data", and an "Apply" button. Below this is a table with columns "VTR", "Vessel", and "Date". A large blue vertical banner with the text "Vessel Names" is overlaid on the "Vessel" column. The table lists various VTR numbers and dates, with the row for VTR 11630304 on 11/22/2010 highlighted. On the right, there are tabs for "Trips", "Effort", "Hail", "Discard", "Landing", "Protected Species", "Days at Sea", "Dealer", and "Infractions". The "Dealer Landing" tab is active, showing a table with columns "Sold Date", "Species", "Quantity", and "Live Weight". The table contains three rows of data. Below the table are input fields for "Species", "Dealer", "Sold Date", "Quantity Landed" (with a unit "LB" label), and "Live Weight". There are buttons for "New Landing", "Remove Landing", and "Save Landing".

Sold Date	Species	Quantity	Live Weight
11/24/2010	Goosefish - Guttled, Head On	2589	2951
11/24/2010	Goosefish - Livers	194	0
11/24/2010	Goosefish - Guttled, Head On	399	455

- Trips
- Effort
- Protected Species
- Day at Sea
- Dealer
- Infractions

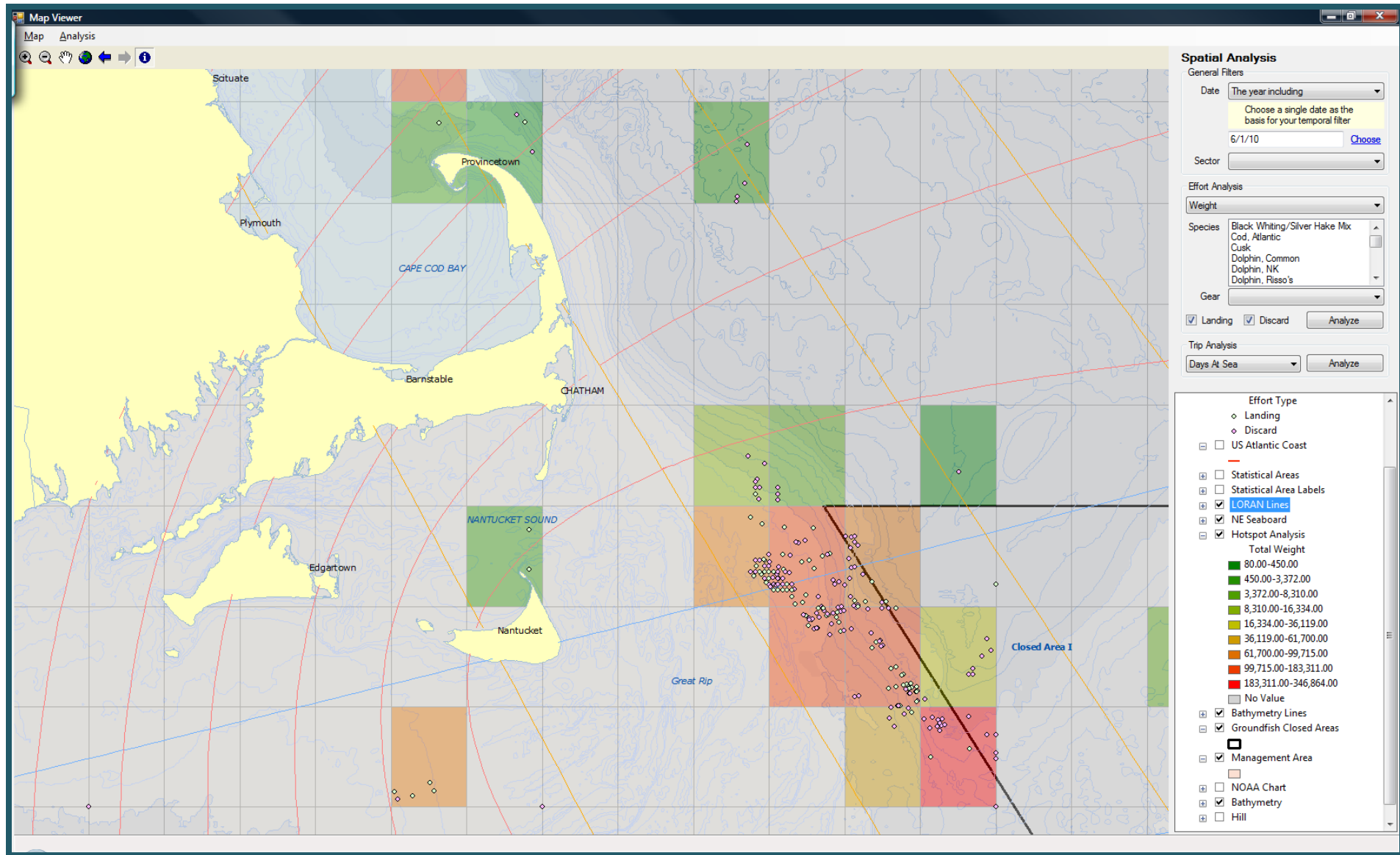
# Database Counts

1,246	Dealers
550	Fishing Areas
789	Ports
141	Gear Types
400	Species in 18 Categories
96	Vessels
1,576	Trips
7,108	Catches
14,497	Observer Discards



# Building Blocks:

Map Viewer



# Identify

The screenshot displays the AppGeo interface. The main map shows the US Atlantic Coast with various geographical features labeled, including Brewster, CHATHAM, Gill Pond Bar, Chatham Bar, Schooner Bar, Pollock Rip, TUCKET SOUND, Monomoy Shoals, Nantucket, Bass Rip, Davis Bank, Great Rip, and Closed Area I. A yellow highlight is visible on the map.

The 'Identify' window is open, showing the following information:

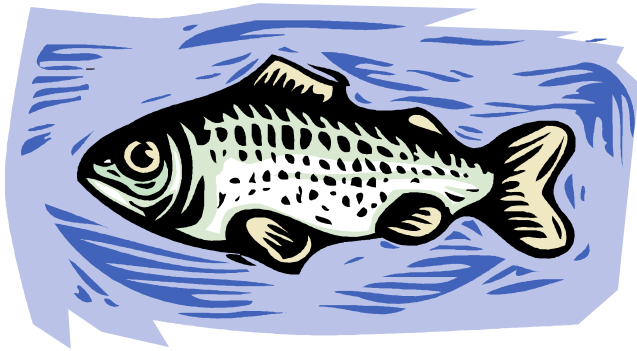
- Identify from: <Top-most layer>
- Effort
  - Fishery
  - Fishery
- Location: 69°13'20.12"W 41°19'48.409"N
- Field Value
- FID 690
- Shape Point
- Trip Number 101642
- Effort Group Fishery
- Effort Type Catch
- Effort Number 1
- Effort Date 9/14/2010
- Species ID 164712UN49LB
- Weight 500

The 'Spatial Analysis' panel is also visible, showing the following settings:

- General Filters
  - Date: (no temporal filter)
  - Choose a single date as the basis for your temporal filter
  - 03/23/2011 [Choose](#)
  - Sector: Fixed Gear Sector
- Effort Analysis
  - Weight: (dropdown)
  - Species: Black Whiting/Silver Hake Mix, **Cod, Atlantic**, Cusk, Dolphin, Common, Dolphin, NK, Dolphin, Risso's
  - Gear: Gill Nets
  - Landing  Discard [Analyze](#)
- Trip Analysis
  - Days At Sea: (dropdown) [Analyze](#)
- Legend
  - Labels
  - Trips
  - Effort
    - Effort Type
      - Landing
      - Discard
  - US Atlantic Coast
  - Statistical Areas

# Remaining Quota

Annual Catch Entitlement (AC E)  
Quota by Species (lbs)



— Harvest  
(YTD Landings (lbs) + Discards)

— AC E Remaining  
In Pounds & Percentage

# Report Titles

- Current Discard Rate
- Quota Allocation History by Vessel
- Quota Summary
- SIMM ACE Status Data (Daily, Weekly)
- SIMM ACE Status Report
- SIMM Detail Report Data Feed (Daily,Weekly)
- SIMM Infraction Report
- Trip Detail (By VTR, By Stock)

# Reports: Quota Allocation History

Fishing Year 2010

Sector ACE

Stock Area: CODGBW

Current Sector ACE

979,592

TXN Date	TXN Type	Vessel in TXN	TXN Amount (Lbs of Stock)	Lease Dollar Amount	Lease Price Per Lb.	TXN Id	TXN Notes
28-May-2010 18:18	Lease between Vessels	Vessel Names	-7,610	\$0	\$0.00	<a href="#">5-28-10</a>	Consolidate catch
28-May-2010 18:18	Lease between Vessels		7,610	\$0	\$0.00	<a href="#">5-28-10</a>	Consolidate catch
28-May-2010 18:49	Lease between Vessels		-7,055	\$0	\$0.00	<a href="#">5-28-10</a>	Consolidate catch
28-May-2010 18:49	Lease between Vessels		7,055	\$0	\$0.00	<a href="#">5-28-10</a>	Consolidate catch
28-May-2010 18:56	Lease between Vessels		-47,907	\$0	\$0.00	<a href="#">5-28-10</a>	Consolidate catch
28-May-2010 18:56	Lease between Vessels		47,907	\$0	\$0.00	<a href="#">5-28-10</a>	Consolidate catch
28-May-2010 18:58	Lease between Vessels		-47,907	\$0	\$0.00	<a href="#">5-28-10#2</a>	Correct transfer
28-May-2010 18:58	Lease between Vessels		47,907	\$0	\$0.00	<a href="#">5-28-10#2</a>	Correct transfer
28-May-2010 19:27	Lease between Vessels		-32,856	\$0	\$0.00	<a href="#">5-28-10</a>	Consolidate catch
28-May-2010 19:27	Lease between Vessels		32,856	\$0	\$0.00	<a href="#">5-28-10</a>	Consolidate catch
28-May-2010 19:49	Lease between Vessels		-82	\$0	\$0.00	<a href="#">5-28-10</a>	Consolidate catch
28-May-2010 19:49	Lease between Vessels		82	\$0	\$0.00	<a href="#">5-28-10</a>	Consolidate catch
28-May-2010 19:54	Lease between Vessels		-42	\$0	\$0.00	<a href="#">5-28-10</a>	Consolidate catch
28-May-2010 19:54	Lease between Vessels		42	\$0	\$0.00	<a href="#">5-28-10</a>	Consolidate catch
31-May-2010 12:16	Lease between Vessels		-21,350	\$0	\$0.00	<a href="#">5-28-10</a>	Consolidate quota
31-May-2010 12:16	Lease between Vessels		21,350	\$0	\$0.00	<a href="#">5-28-10</a>	Consolidate quota
31-May-2010 12:26	Lease between Vessels		-23,033	\$0	\$0.00	<a href="#">5-28-10</a>	Consolidate quota
31-May-2010 12:26	Lease between Vessels		23,033	\$0	\$0.00	<a href="#">5-28-10</a>	Consolidate quota

# Reports: Quota Summary

## Fishing Year 2010

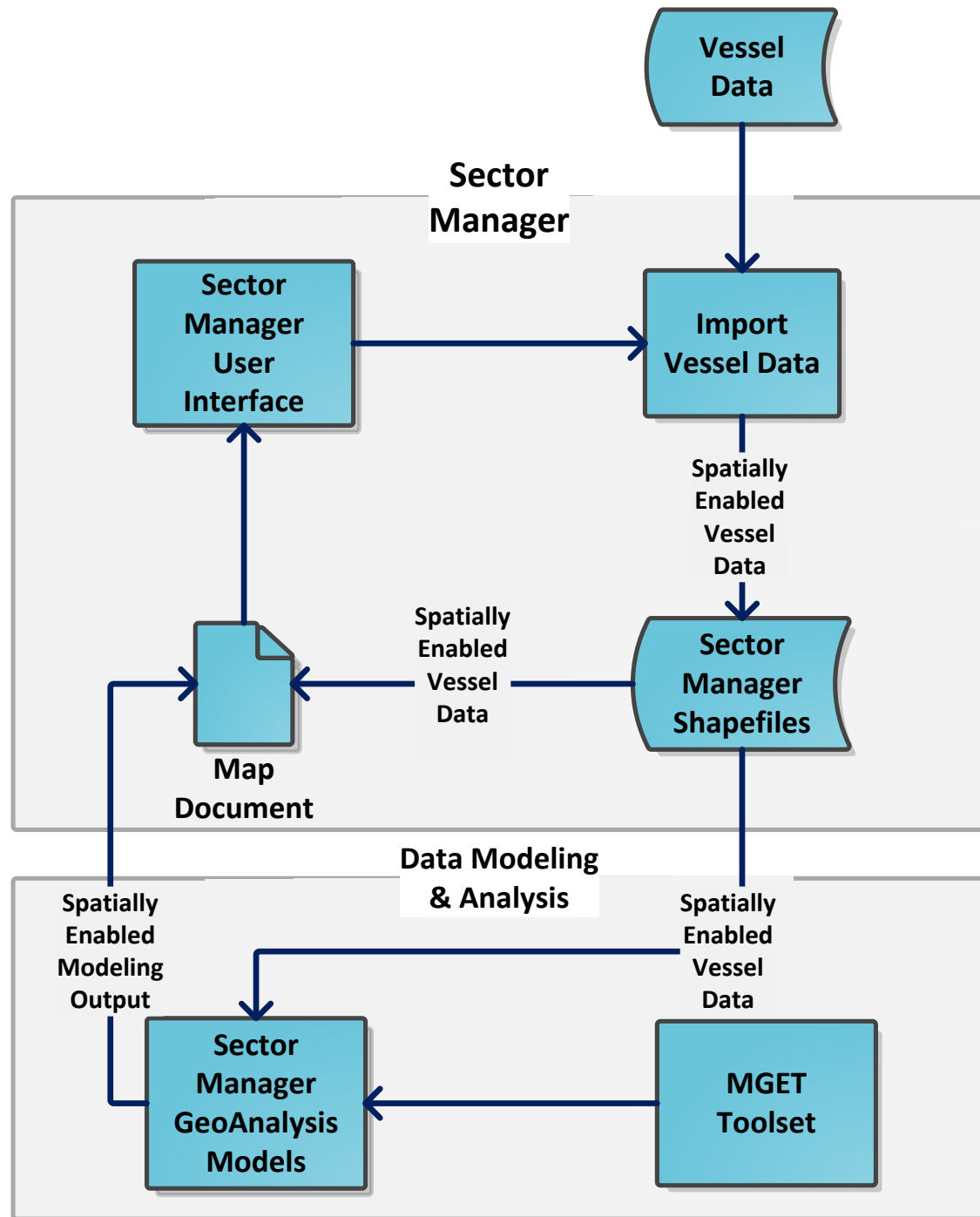
### Sector: Fixed Gear Sector

Quota ID	Sector	Parent Stock	Annual Catch Entitlement (ACE)	Year To Date Cumulative Amounts			ACE Remaining	
				Landed (Live Lbs)	+ Discard	= Tot. Harvest	Pounds	Pct
101	Fixed Gear Sector	CODGBE;EGB Cod	201,221	164,497	12,386	176,883	24,338	87.91
102	Fixed Gear Sector	CODGBW;WGB Cod	979,592	429,458	49,662	479,121	500,471	48.91
103	Fixed Gear Sector	FLDSNEMA;SNEMA Windowpane (Dab)	0	7	32,258	32,265	-32,265	0.00
104	Fixed Gear Sector	FLWGB;GB Winter Flounder (BB)	1,390	867	76	943	447	67.86
105	Fixed Gear Sector	FLWGMSS;GOM Winter Flounder (BB)	7,777	151	43	194	7,583	2.49
106	Fixed Gear Sector	HADGBE;EGB Haddock	1,577,841	289,660	8,312	297,972	1,279,869	18.88
107	Fixed Gear Sector	HADGBW;WGB Haddock	3,760,379	390,460	9,330	399,791	3,360,588	10.63
108	Fixed Gear Sector	HADGM;GOM Haddock	68,383	72	1	73	68,310	0.11
109	Fixed Gear Sector	CODGMSS;GOM Cod	330,537	139,215	306	139,521	191,016	42.21
110	Fixed Gear Sector	FLGMGBSS;GOMGB Windowpane (Dab)	0	7	439	446	-446	0.00
111	Fixed Gear Sector	FLWSNEMA;SNEMA Winter Flounder (BB)	0	9	5,588	5,597	-5,597	0.00
112	Fixed Gear Sector	HALGMMA;HALIBUT, ATLANTIC	0	554	1,555	2,109	-2,109	0.00
113	Fixed Gear Sector	HKWGMMA;White Hake	136,191	40,402	1,772	42,175	94,016	30.97
114	Fixed Gear Sector	OPTGMMA;OCEAN POUT	0	0	2,926	2,926	-2,926	0.00
115	Fixed Gear Sector	OTHER - ANG;MONKFISH (GOOSEFISH)	0	0	0	0	0	0.00
116	Fixed Gear Sector	OTHER - HKR;HAKE, RED (LING)	0	0	0	0	0	0.00
117	Fixed Gear Sector	OTHER - HKS;HAKE, SILVER (WHITING)	0	0	0	0	0	0.00
118	Fixed Gear Sector	PLAGMMA;PLAICE (Dab)	10,173	553	308	861	9,312	8.46
119	Fixed Gear Sector	POKGMSS;POLLOCK	2,184,603	242,038	8,811	250,850	1,933,753	11.48
120	Fixed Gear Sector	REDGMGBSS;REDFISH, NK (OCEAN PERCH)	398,270	6,430	64	6,494	391,776	1.63
121	Fixed Gear Sector	WITGMMA;WITCHFL (Gray Sole)	3,433	344	75	419	3,014	12.19
122	Fixed Gear Sector	WOLGMMA;WOLFFISH, ATLANTIC	0	0	4,319	4,319	-4,319	0.00
123	Fixed Gear Sector	YELCCGM;GOM Flounder, Yellowtail	25,967	603	349	952	25,015	3.67
124	Fixed Gear Sector	YELGB;GB Flounder, Yellowtail	272	78	16	94	178	34.60
125	Fixed Gear Sector	YELSNE;SNEMA Flounder, Yellowtail	1,259	0	7	7	1,252	0.53
<b>Fixed Gear Sector Totals</b>			<b>9,687,288</b>	<b>1,705,406</b>	<b>138,604</b>	<b>1,844,010</b>	<b>7,843,278</b>	

# Reports: Quota Status

<u>Week Ending Date</u>	<u>Sector Name</u>	<u>Stock Area</u>	<u>Total Original</u>	<u>Total Curren</u>	<u>Harvested</u>	<u>Remaining</u>	<u>Percent</u>
03/12/2011	Fixed Gear Sector	CODGBE	208,875	201,221	176,883.36373	24,337.6362607	87.9050220
03/12/2011	Fixed Gear Sector	CODGBW	1,910,776	979,592	479,120.76069	500,471.239305	48.9102360
03/12/2011	Fixed Gear Sector	FLWGB	1,090	1,390	943.24914640	446.750853594	67.8596510
03/12/2011	Fixed Gear Sector	FLWGMSS	7,777	7,777	193.59673500	7,583.40326500	2.4893500
03/12/2011	Fixed Gear Sector	HADGBE	1,692,687	1,577,841	297,971.62955	1,279,869.3704	18.8847690
03/12/2011	Fixed Gear Sector	HADGBW	4,017,379	3,760,379	399,790.66181	3,360,588.3381	10.6316590
03/12/2011	Fixed Gear Sector	HADGM	23,383	68,383	72.518825000	68,310.4811750	0.1060480
03/12/2011	Fixed Gear Sector	CODGMSS	190,837	330,537	139,520.98991	191,016.010090	42.2104000
03/12/2011	Fixed Gear Sector	HKWGMMA	331,691	136,191	42,174.536383	94,016.4636169	30.9671980
03/12/2011	Fixed Gear Sector	PLAGMMA	34,673	10,173	860.67377319	9,312.32622680	8.4603730
03/12/2011	Fixed Gear Sector	POKGMSS	472,294	2,184,603	250,849.54812	1,933,753.4518	11.4826150
03/12/2011	Fixed Gear Sector	REDGMGBSS	436,270	398,270	6,493.9052695	391,776.094730	1.6305280
03/12/2011	Fixed Gear Sector	WITGMMA	14,933	3,433	418.62107805	3,014.37892194	12.1940310
03/12/2011	Fixed Gear Sector	YELCCGM	31,297	25,967	952.07904271	25,014.9209572	3.6664960
03/12/2011	Fixed Gear Sector	YELGB	272	272	94.124817087	177.875182913	34.6047120
03/12/2011	Fixed Gear Sector	YELSNE	1,259	1,259	6.626690000	1,252.37331000	0.5263460

# Integration: MGET Tools



# Future: What's next

- Already open source code
- More Sectors adoption
- Web-based
- Integration with MGET analysis tools

# New England Cod Chowder

## Ingredients

- 1/4 pound sliced bacon
- 1 tablespoon butter
- 2 onions, chopped
- 2 cups water
- 1 cup bottled clam juice
- 3/4 pound boiling potatoes (about 2), peeled and cut into 3/4-inch chunks
- 1 rib celery, chopped
- 1/4 teaspoon dried red-pepper flakes
- 1 1/4 teaspoons salt
- 2 cups fresh (cut from about 3 ears) or frozen corn kernels
- 1 cup milk
- 1 cup heavy cream
- 1 1/2 pounds cod fillets, cut into 1 1/2-inch chunks
- 1/4 teaspoon fresh-ground black pepper

## Directions

- ✓ In a large pot, cook the bacon until crisp. Drain the bacon on paper towels and crumble when cooled.
- ✓ Add the butter and onions to the pot. Cook over moderately low heat, stirring occasionally, until the onions are translucent, about 5 minutes.
- ✓ Add the water, clam juice, potatoes, celery, red-pepper flakes, and salt and bring to a boil. Reduce the heat and simmer until the potatoes are tender, about 20 minutes.
- ✓ Return the bacon to the pot. Add the corn, milk, and cream and simmer for 10 minutes. Stir in the cod and pepper. Bring back to a simmer and cook until just done, about 3 minutes longer.

