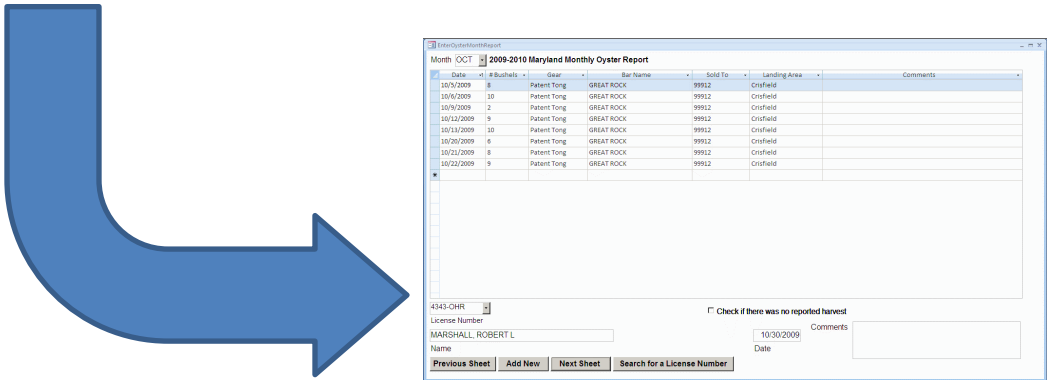
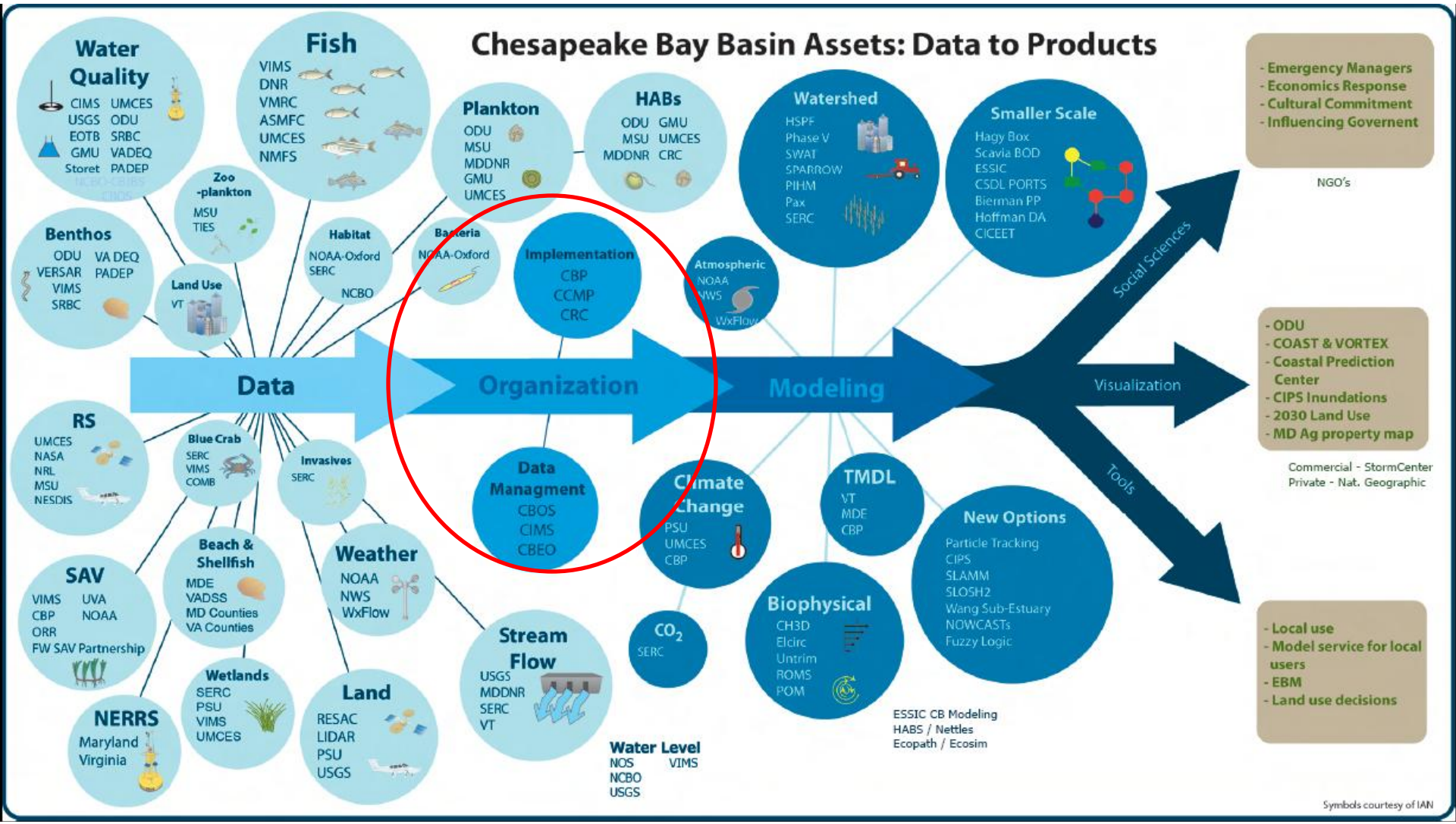
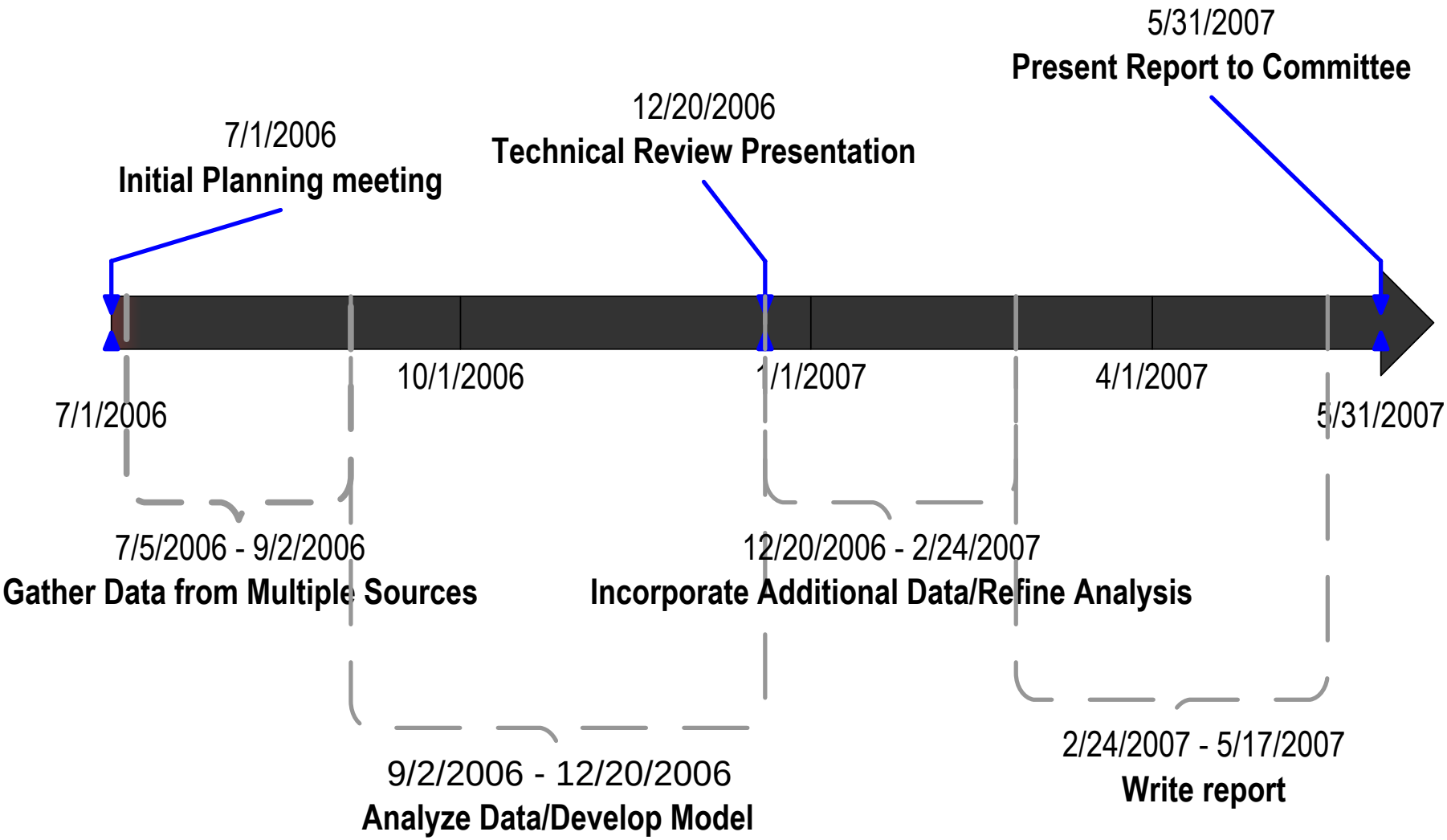
The Oyster Data Tool: Compiling State and Federal Oyster-related Data into a Single Database



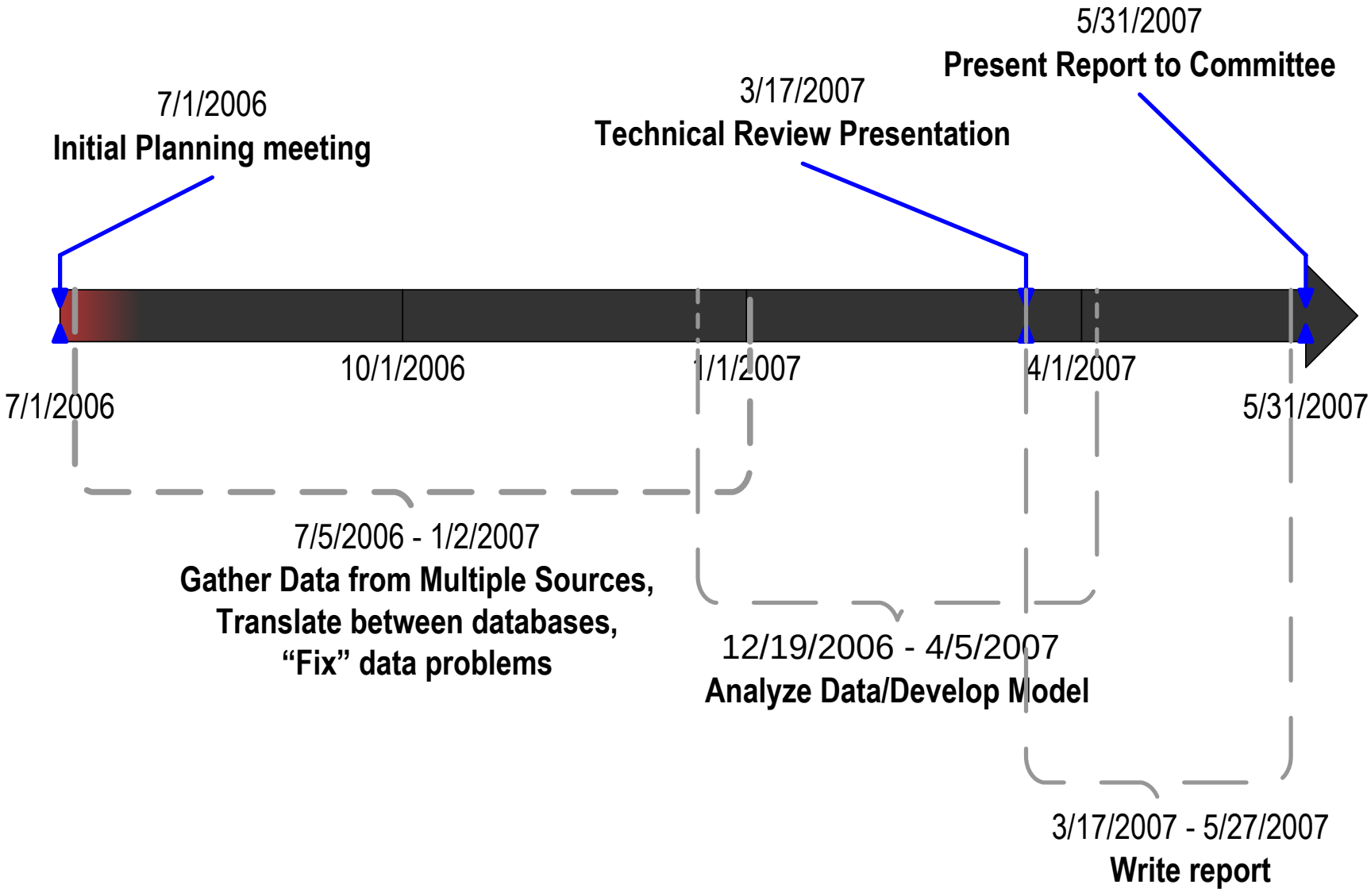
Ideal View of Providing Science For Ecosystem-based Restoration



Ideal timeline for completing analysis/modeling project



Real timeline for completing analysis/modeling project



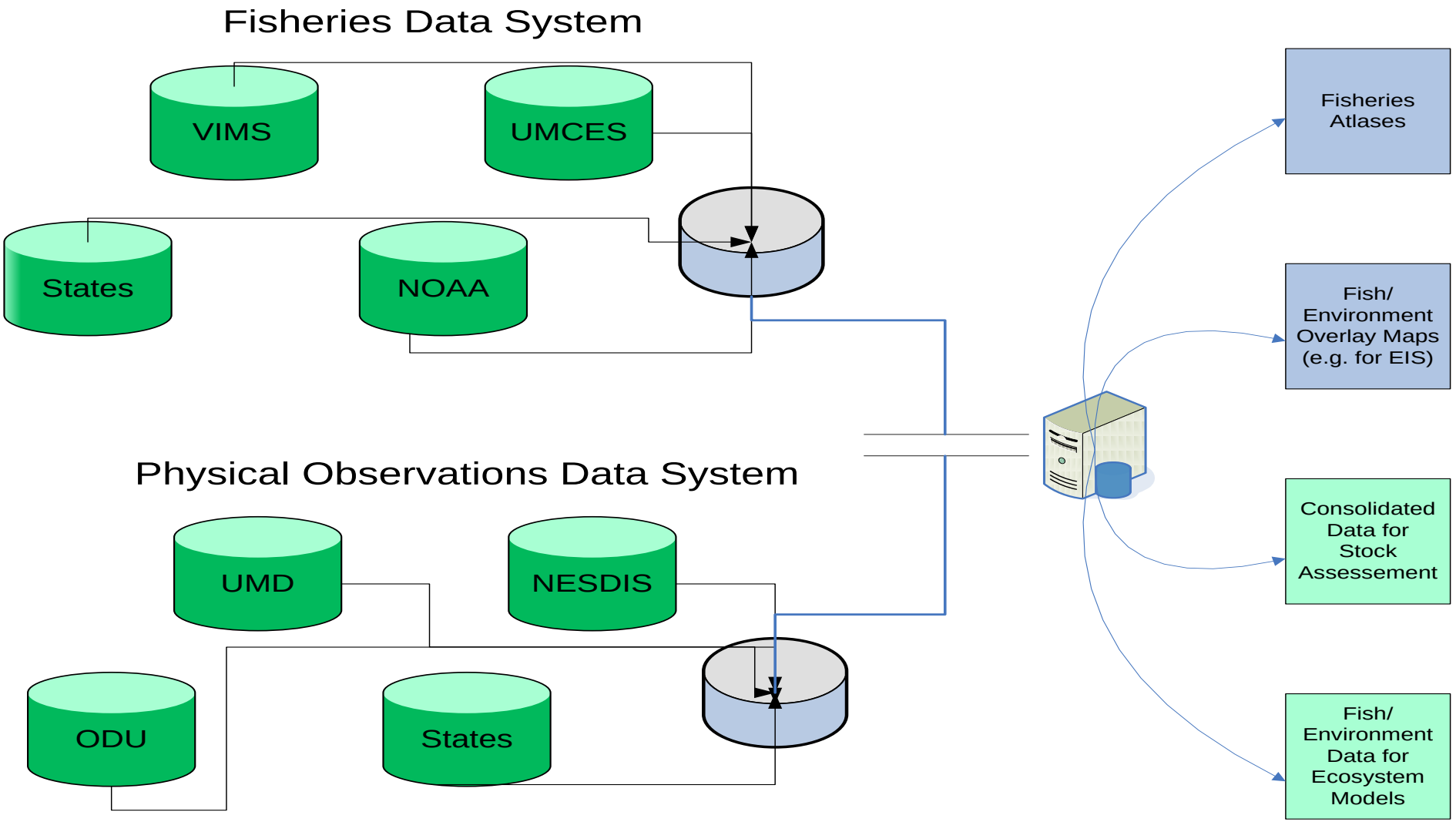
Reasons we ought to be integrating data

- International Council for the Exploration of the Seas – “By maximizing the availability of data to the community at-large, ICES promotes the use of these data, thereby ensuring that their maximum value can be realized and thus contribute to an increased understanding of the marine environment.”

- National Research Council Report 2006 Dynamic Changes in Marine Ecosystems- “Fisheries data currently are fragmented and dispersed, thus slowing the use of these data in comprehensive analysis…Better data management is fundamental to implementing ecosystem-based management of fisheries.”

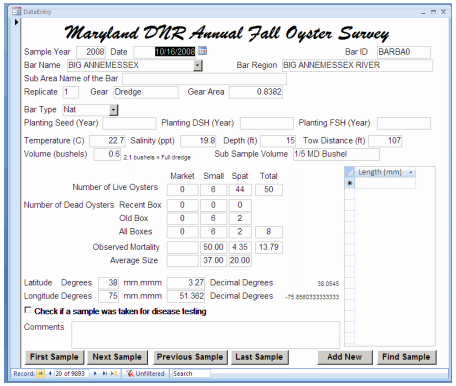
- NOAA- Key Science needs to support EAM - “Modeling, experimental ecology, and observation systems linked to support adaptive approaches to human uses of marine ecosystems consistent with goals of sustainable use”

Chesapeake Bay Ecosystem Integrated Information Systems (CBEIIS) – Expediting Data delivery and Integration



First steps towards expedited and integrated data delivery

- Chesapeake Bay Ecosystem Integrated Information Systems (CBEIIS) – Incorporating Oysters:
  - Comprehensive Chesapeake Oyster Database



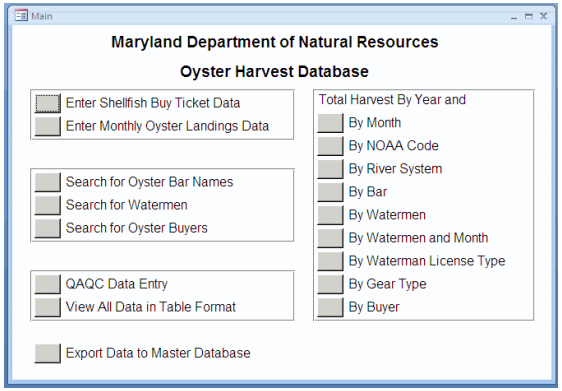
  - Oyster Data Tool

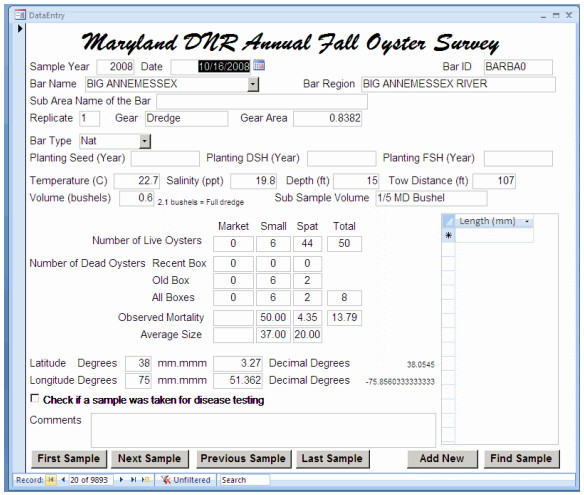
First steps towards expedited and integrated data delivery

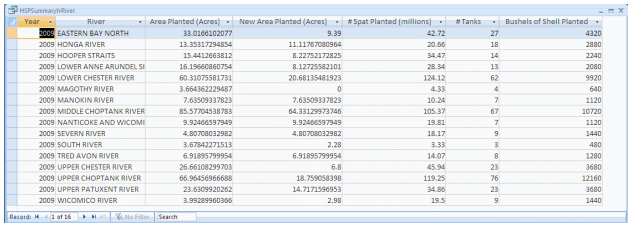
- COD: Integration of geo-referenced oyster data enables spatial visualization of all facets of oyster management
  - Managers can pull up information on disease, harvest, restoration, and mortality for a given bar at the click of a mouse.
- Oyster Data Tool: Integration of geo-referenced oyster data with other water quality /physico-chemical and habitat data facilitates making connections between water quality, habitat, and living resources.
  - Facilitates science-grounding of ecosystem-based management, with at-a-glance environmental info.
  - Facilitates research and understanding. Scientists and managers will be able to spend more time on analysis and modeling and less time on searching for data and integrating it.

Comprehensive Chesapeake Oyster Database (COD)

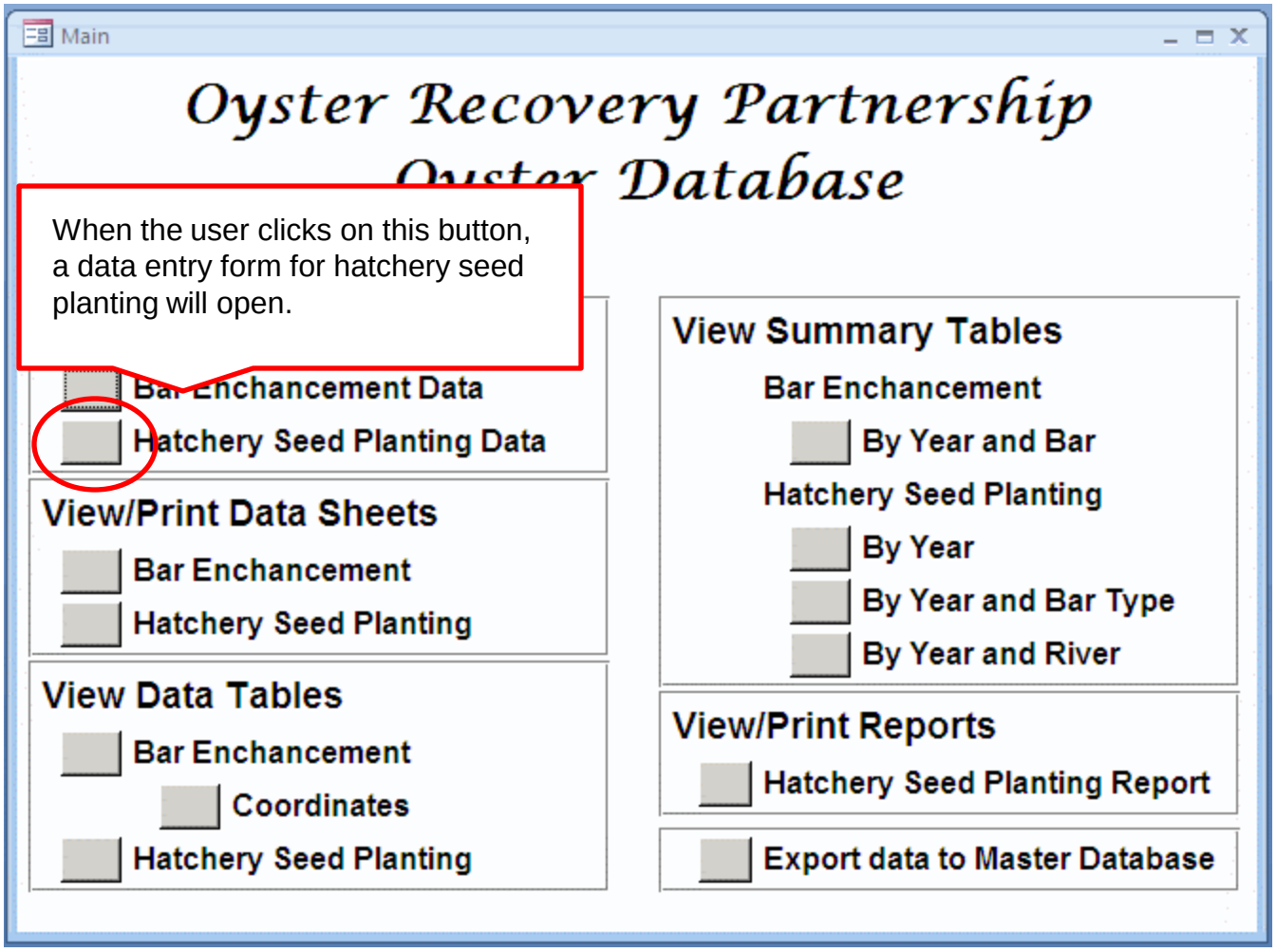
- Maryland DNR, and Virginia MRC, to develop improved methods for entering and integrating all facets of oyster data
  - Including harvest, disease, survey and restoration
- Data can be more rapidly QA/QC'ed and reports easily generated





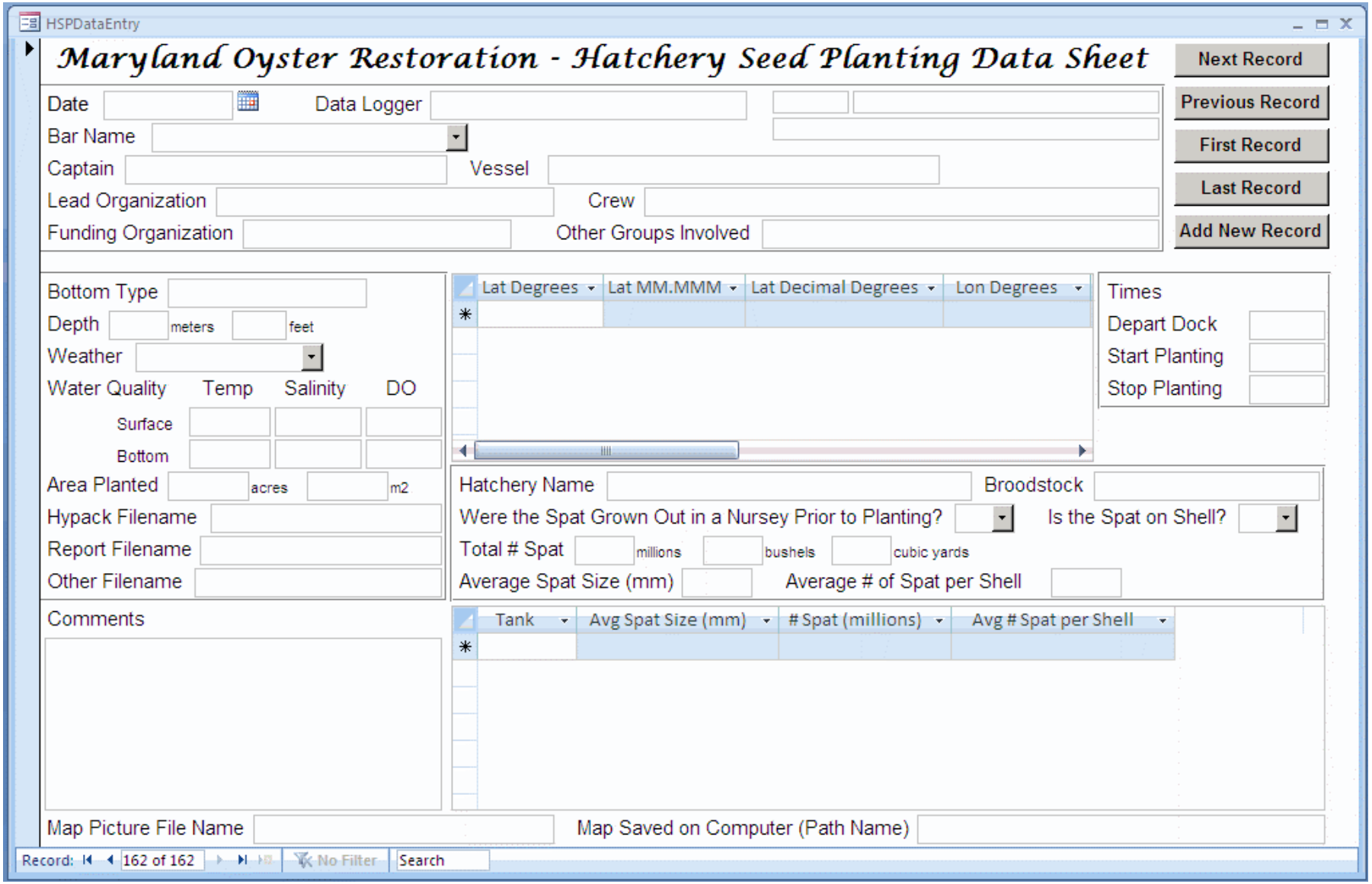


COD- Facilitates Data Entry

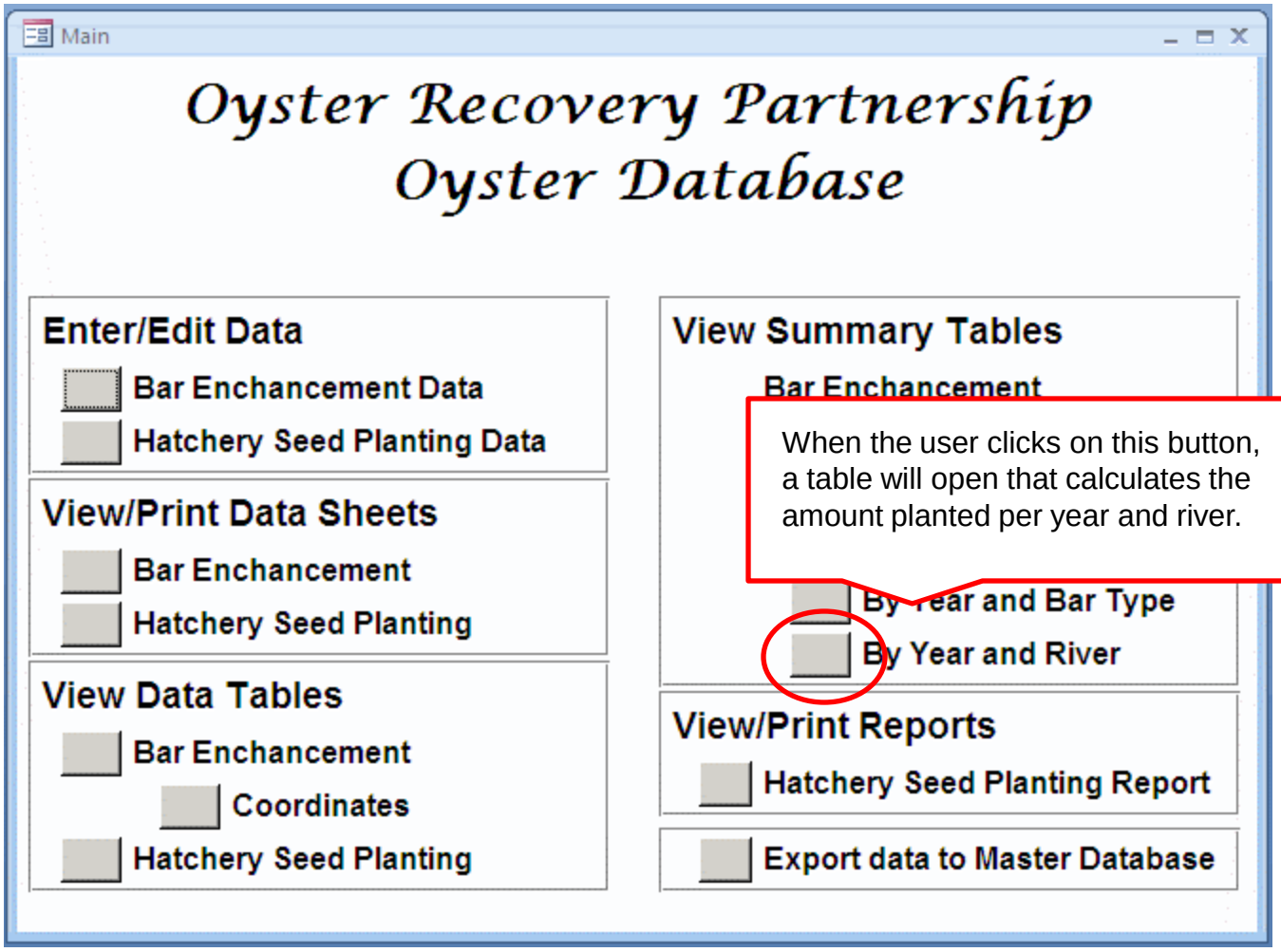


Activities database for bar enhancement and hatchery seed planting

COD- Facilitates Data Entry



COD- Facilitates Reporting



Activities database for bar enhancement and hatchery seed planting

COD- Facilitates Reporting

HSPSummaryYrRiver

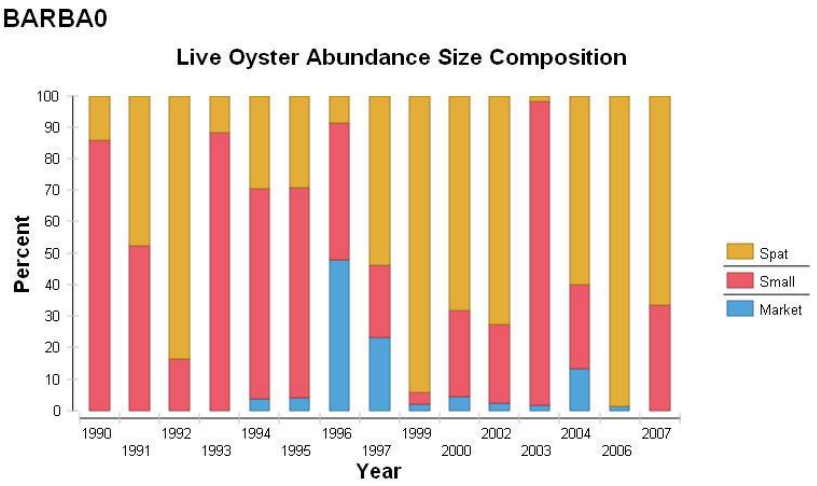
Year	River	Area Planted (Acres)	New Area Planted (Acres)	# Spat Planted (millions)	# Tanks	Bushels of Shell Planted
2009	EASTERN BAY NORTH	33.0166102077	9.39	42.72	27	4320
2009	HONGA RIVER	13.35317294854	11.11767080964	20.66	18	2880
2009	HOOPER STRAITS	15.4412663812	8.22752172825	34.47	14	2240
2009	LOWER ANNE ARUNDEL SI	16.19660860754	8.12725582101	28.34	13	2080
2009	LOWER CHESTER RIVER	60.31075581731	20.68135481923	124.12	62	9920
2009	MAGOTHY RIVER	3.664362229487	0	4.33	4	640
2009	MANOKIN RIVER	7.63509337823	7.63509337823	10.24	7	1120
2009	MIDDLE CHOPTANK RIVER	85.57704538783	64.33129973746	105.37	67	10720
2009	NANTICOKE AND WICOMI	9.92466597949	9.92466597949	19.81	7	1120
2009	SEVERN RIVER	4.80708032982	4.80708032982	18.17	9	1440
2009	SOUTH RIVER	3.67842271513	2.28	3.33	3	480
2009	TRED AVON RIVER	6.91895799954	6.91895799954	14.07	8	1280
2009	UPPER CHESTER RIVER	26.66108299703	6.8	45.94	23	3680
2009	UPPER CHOPTANK RIVER	66.96456966688	18.759058398	119.25	76	12160
2009	UPPER PATUXENT RIVER	23.6309920262	14.7171596953	34.86	23	3680
2009	WICOMICO RIVER	3.99289960366	2.98	19.5	9	1440

Record: 1 of 16 | No Filter | Search

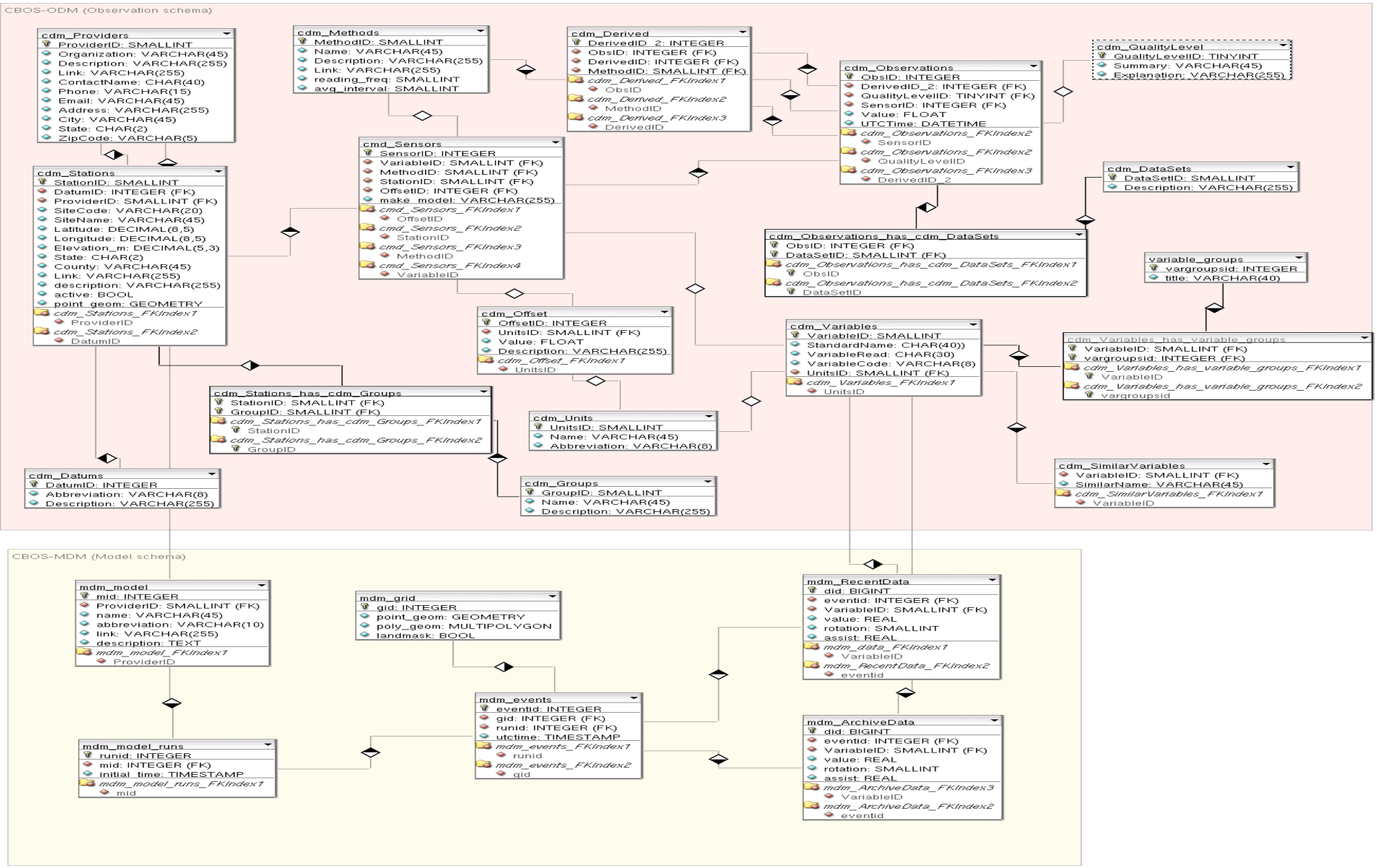
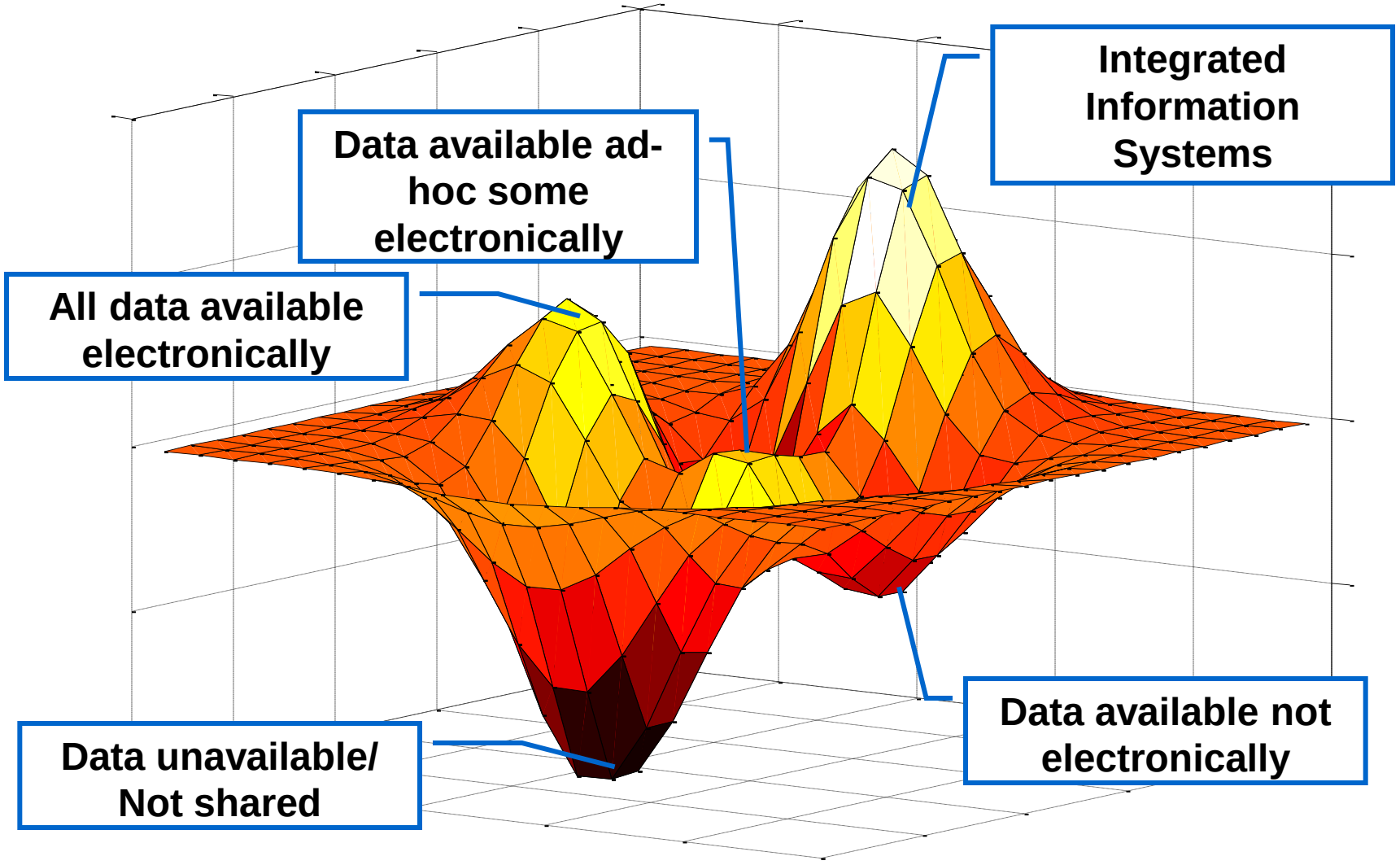
Example of a summary table created from database calculating total area planted and number of spat planted. This can be pasted into a report or excel table, or imported into an analysis program like SAS or R. As more data is entered into the database, this table will be automatically updated.

Chesapeake Bay Ecosystem Integrated Information System (CBEIIS) – Oyster Data Tool

- Working with Versar, NCBO has developed methods for integrating oyster data (and other living resource data) with water quality (physicochemical data) and displaying data on maps and generating reports. All this can be done from a web browser.
  - For example, the system allows temperature, salinity, and bathymetry data to be overlaid on a map with restoration and disease data. This will help make decision on where to invest restoration funds



Oyster Data Tool – Connects to Lots of Physical/Observations Data



Pitfalls and peaks for developing Integrated IS