ARRV Meeting 6/13/02 - Gary Stauffer

1. Academic and Agency researchers have More than 30 years of experience in investigating the oceanography and fishery resources (usually in separate or uncoordinated efforts) in the Bering Sea and the Gulf of Alaska.
(Contain unique marine habitats, support large pop of commercial valuable fish and shellfish stocks >2.5 mil tons, diverse population of forage fishes and abundant immy? and birds. Landed value in excess of $16 billion landed catch)

2. We've identified current systems, measured the physical properties and estimated their transport. We've tracked fluctuations in many of the living resources from fish to birds to marine mammals.

3. a) We know that consistent decadal patterns in oceanographic conditions which coincide with apparent periods of high or low fish production.
b) We've observed short-term changes in oceanographic conditions in the Bering Sea and Gulf of Alaska in El Nino years and at the same time observed changes in fish distribution and density.
c) We've observed that some species have good recruitment in subsequent years resulting from stimg (hic) year classes coming from the spawning the year following strong El Ninos.

4. Because of these observations, our constituents including many Alaskans & the scientific community are calling for ecosystem-based management for our nation's marine resources.

5) Not only do we need to understand how changes in climate/ oceanographic conditions alter the productivity of the ecosystem and therefore abundance of the resources.

But also how selective exploitation of a particular fish stock or group of stocks impacts the other living resources, e.g. birds and mammals.

6) We need to be able to forecast the impact of changes in ocean climate and exploitation on the productivity of the ecosystems/ Biological community.

7) This translates into need to develop implementation of numerical models to understand ecosystem dynamics and predict ecosystem change.

8) This will require design and implementation of a long-term biophysical monitoring network to include field-proven moorings, drifting buoys, research ships, etc., development of instrumentation to monitor both the

physics and design process studies and retrospective analyses to elucidate linkages and ecosystem response

- Translate physical variability into biological change
- Biophysical links between oceanographic conditions. Productivity of ocean and living resources
- Constituents and scientific comments.

9) Congress M-S FMCA, ESA, MMPA are requiring or demanded that managers incorporate ecosystem principals in our management of fisheries resources.
10) Four new funding sources focused in part on expanding ecosystem research to Pollock conservation coop ~ 1.5M. Stellar Sea Lion Research Program ~ 40M. Gulf of Alaska Ecosystem Monitoring and Research Program ~ 4-6M. NP Marine Research Program >10M

These are in addition to NOAA's FOCI and COP programs. GLOBEC and NASA FATE initiatives, and BASIS Ocean Carrying Capacity target line on Alaskan Salmon.

All these programs require modern, diverse, safe research vessels with diverse sampling capability which can sample both physics and biological components in the Bering Sea and Gulf of Alaska ecosystem in all seasons. Currently there are two dedicated U.S. research vessels working in Alaska: The UNOLS Ship R/V ALPHA HELIX and the NOAA Ship MILLER FREEMAN. Both are old vessels but in good condition. MILLER FREEMAN in the only ship that has capability of making both oceanographic biological observations and sampling all trophic levels.

MILLER FREEMAN – 243 days ~ 200 in Alaska

- Trawl sampling bottom/midwater
- Acoustic survey (38,120, 200 kHz) water column
- Plankton sampling, MOCNESS, etc.
- CTD and water sampling
- ADCP
- Marine Mammal observations
- Oceanographic mooring deployment and retrieval

During the course of a year, the MILLER FREEMAN conducts all these activities.

NOAA is currently designing a new FRV to be names the OSCAR DYSON that will be home ported in Kodiak. Once this comes on line, MILLER FREEMAN will be deployed ½time off the West Coast and ½time off Alaska. Once a 3rd FRV is completed for the West Coast, MILLER

FREEMAN will return fulltime to Alaska. By then MILLER FREEMAN will be 40 years old.

NOAA will continue to have responsibility for long-term area-wide ocean/resource monitoring/research programs in support of our management mission leaving little time for experimental research.

ARRV – Have a great need for 2nd research vessel with full ecosystem sampling capability to carry out site specific, process oriented studies.

- Oceanographic sampling full range
- Mooring deployment/recovery
- Plankton Sampling
- Forage near surface sampling
- Water column biological sampling
- Full spectrum of acoustic sampling of the water column
- Bottom and midwater trawling capability
- Observation capability for marine birds and mammals.

Tradeoff ice capability vs. quiet ship. Can't have both.
OSCAR DYSON will be quiet but have little ice capability.
ARRV – Capable of sampling in ice but not acoustically quiet

- Major advantage – investigate ecosystem under the ice
- Trawl system – portable
- Winches/net reel (mooring deployment)
- Stern ramp in support of trawling but like OSCAR DYSON will need platform
- Center Board both ships
- OD transducers/hydroplanes away from hull improve quality of acoustic communication and increase ride and working ability in seas.
- ADCP
- Fishery Acoustic
- Acoustic release communication
- Trawl system
- ARRV Acoustic communication performance

OSCAR DSYSON and ARRV compatible capabilities support multidisciplinary approach, multi-seasonal capability.