

Appendix 3. Preliminary themes identified by at least three science centers in their regional workshops for the FY 2013 AST process.

Strategic themes	Center	Applications	Purpose/benefits
Catchability/gear selectivity or efficiency	NE	Habitat and time-specific estimates of gear efficiency	Transition from relative to absolute abundance indices
	AK	Observe trawl function to estimate Q for GOA and AI rockfish, AI Atka mackerel, BS blue king crab	Verify/improve estimates of Q used in stock assessment models
	PI	Calibration cruises to assess gear biases	Incorporate fishery-independent data into existing data-poor bottomfish assessments that use only fishery-dependent data
Surveys in untrawlable habitat	SW	Biomass/abundance in previously un-or under-surveyed areas, habitats, etc.	Expand spatial and temporal scope of stock-specific observations to improve stock assessments
	NW	Develop appropriate optical surveys of untrawlable habitat for key species, also genetic hooks	Provide new or vastly improved fishery-independent data on rockfish for stock assessments
	AK	Acoustic or optical systems for survey untrawlable habitat	Provide new or vastly improved fishery-independent data on rockfish, Atka mackerel, blue king crab
Life history information	NE	Automation of egg counts, reading otoliths, other "biological bottlenecks"	Speed up data production for stock assessments
	SE	More efficient processing and analysis of otoliths, age-growth parameters, reproduction, and biological condition	Speed up data production for stock assessments
	NW	Otolith and histological analysis supporting aging and maturity analysis	Improve and speed up stock assessments for commercial species (hake, sablefish, rockfishes)
	AK	Key biological parameters using existing technologies	Improve assessments
Organism movement information	NE	Tagging technologies for remote detection and reading of tags	Not described
	SW	Electronic and acoustic tracking instruments and ACDP's, PIT and archival tags	Survival rates through key life-history bottlenecks, recruitment indices, patterns of animal movement, spatial and time-series information, for improved (tier 3) stock assessments and protected/closed areas
	NW	Tagging technologies for rockfishes and roundfishes, and ocean observing systems	Improved info on ecology, biology, life history for commercial and protected species, to improve and speed up stock assessments and to enable ecosystem-based management
	AK	Improve location info at high latitudes, underwater tagging	Improved information on life history and seasonal and spatial distribution for assessments

Species or stock identification	SE	Molecular tools for species ID (DNA barcode), characterizing biodiversity, determining source of origin and investigating food-web interactions	Improve accuracy of info used in assessments, determine community structure, assess biodiversity
	SW	Rapid molecular identification	Assess how spatial/temporal changes in distribution affect trends for assessments
	NW	Increased genetic sampling and throughput to support species identification and population dynamics	Stock and population structure for assessments, species ID for rockfish, salmonids, ID benthic biota from trawls for EFH, non-lethal genetic hooks for untrawable habitats.
	AK	At-sea species ID using genetic tools for similarly-appearing species, and for larvae	Improved fishery-dependent and independent data for assessments.
Habitat mapping	SE	Rapid seafloor mapping systems (i.e., synthetic aperture sonar)	Characterize seafloor habitats to improve survey stratification and interpretation
	SW	Composition, distribution, and extent of benthic and demersal habitats	Transition to tier 3 stock assessments and spatial information relevant to open/closed areas and MPAs
	NW	Seafloor mapping and characterization	Informing EFH designation, conservation areas and MPAs, improved abundance estimates for assessments
	PI	High-resolution deep-slope maps with standardized classification scheme	Territories need deep-slope maps for operational assessments.
Sensor integration and platforms	SE	Mobile autonomous platforms (e.g., wave gliders) to record acoustic data over transects and/or serve as "data mules"	Acoustically detect/monitor individual organisms or schools for spatially and temporally explicit records
	SW	Active and passive acoustical systems and optical systems (possibly integrated?)	Characterize spatial/temporal variation leading to improved estimates of vital rates and improved stock assessments
	NW	Combined optic and acoustic mid-watertrawl survey	In-situ, non-lethal fishery-independent survey data for canary, widow, bocaccio rockfish assessment
	NW	Alternative platforms (mobile, not constrained by battery life, such as a wave glider) for acoustic equipment	Expand the spatial and temporal range of fish acoustic surveys, especially for hake
	PI	Operational, terrain-following AUV with inventory of camera systems	Bottomfish surveys and assessments
Fishery-dependent data	NE	Distinguish similar species in dealer sampling of mixed species (also observers?)	Correct species identification for fishery catch
	NE	Video imagery to monitor catch and associated issues (e.g., bycatch?)	Improve information used in stock assessments (also in-season management?)

	SW	Levels and locations of IUU fishing effort	Improved management (and possibly better estimates of fishing mortality?)
	NW	Electronic monitoring of fishing industry	Improved fisheries-dependent data for in-season management and stock assessment
Data processing and management	NE	Automated analysis of remotely collected video and still images for fishery-independent and fishery monitoring	Biological data for assessments
	NE	General issue of processing, analyzing, and storing large amounts of images (and acoustic data as well)	Make data handling operations more efficient
	SE	Streamlined, enterprise-level, acoustic data processing programs	Identify targets (backscatters, vocalizations) for effective and efficient data interpretation
	SE	Data processing solutions to allow for effective use of image data	Improve data processing/analysis capabilities to improve the utility of the data
	SW	Standardized, georeferenced data/image management and efficient, generalized analysis software	Expedite data processing and improve management of large data sets
	NW	Increase processing speed of acoustic and visual data	Derive more information from data to improve stock and ecosystem assessments
	NW	Data management	Maximize the benefit of obtaining the data sets
	PI	Data processing and analysis, standardized optical data processing	Reduce bottleneck in timely processing of data.