



Biosampling and the role of the WPRFMC: Council perspective and needs

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Marine Ecosystem Scientist
WPRFMC

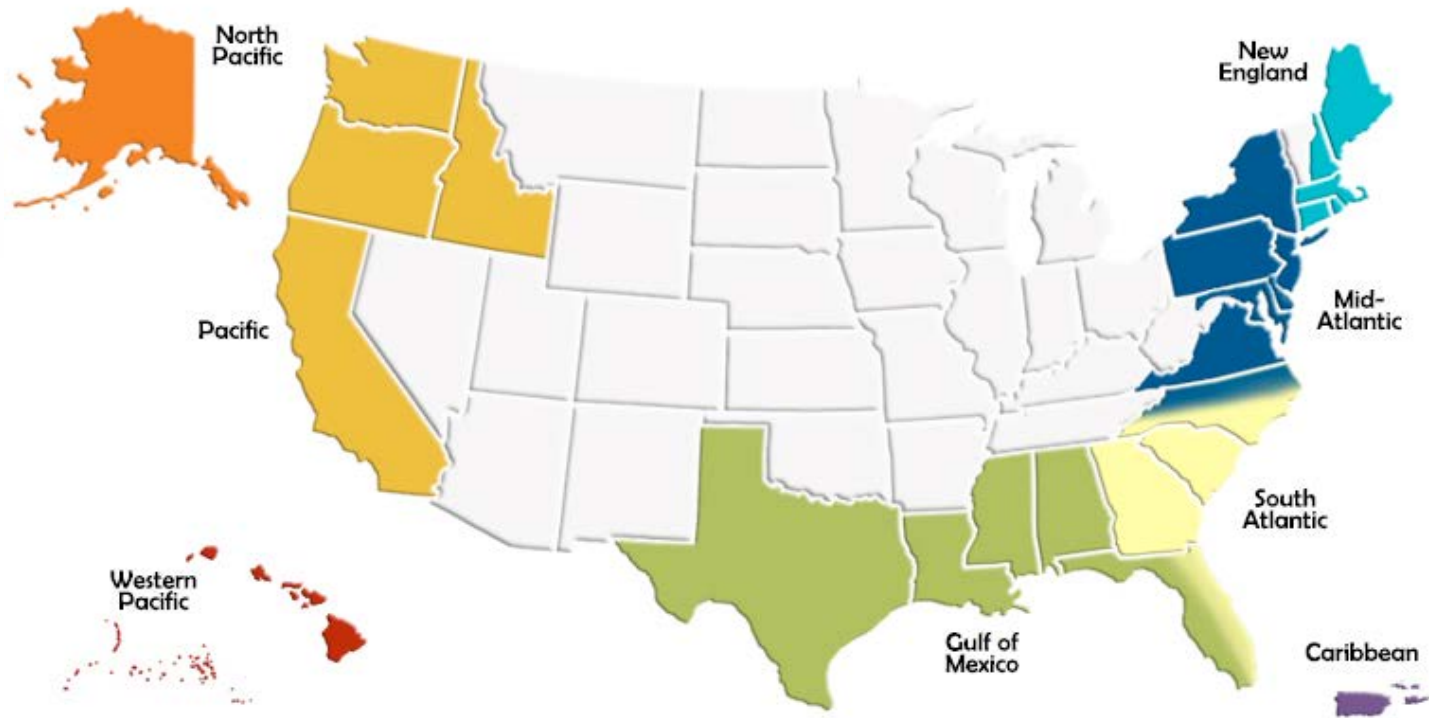
*PIFSC Bio-Sampling Program Review: Hyatt Regency Hotel, Garapan Saipan
January 26-28, 2016*



OUTLINE

- Standard intro (... who we are, what we do)
- Origins and evolution
- Support and partnership
- Council data needs
- “BioSampling plaster”
- Putting all the pieces





New England



Mid-Atlantic



South Atlantic



Caribbean



Gulf of Mexico



Pacific

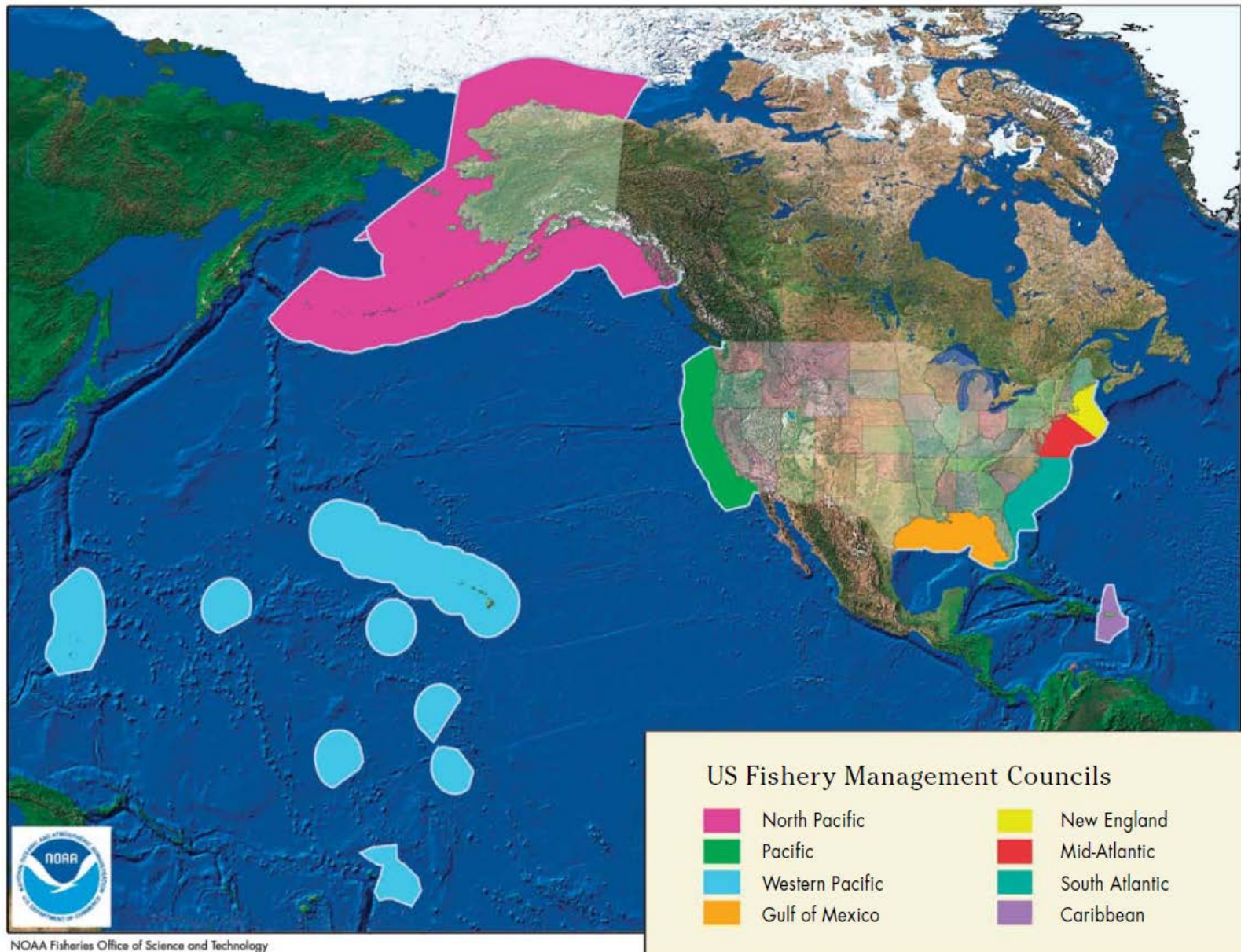


Western Pacific



North Pacific



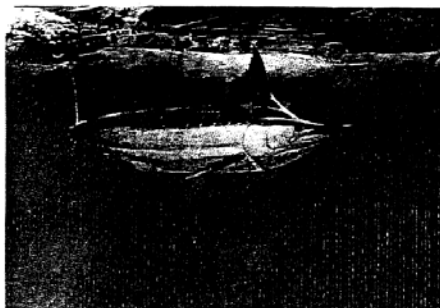


FISHERY MANAGEMENT PLAN
for the
PRECIOUS CORAL FISHERIES (and ASSOCIATED NON-PRECIOUS CORALS)
of the
WESTERN PACIFIC REGION

PREPARED BY
WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL
1164 BISHOP STREET
HONOLULU, HAWAII 96813
SEPTEMBER 1979

FISHERY MANAGEMENT PLAN FOR THE PELAGIC FISHERIES
OF THE WESTERN PACIFIC REGION

FINAL
JULY 1986



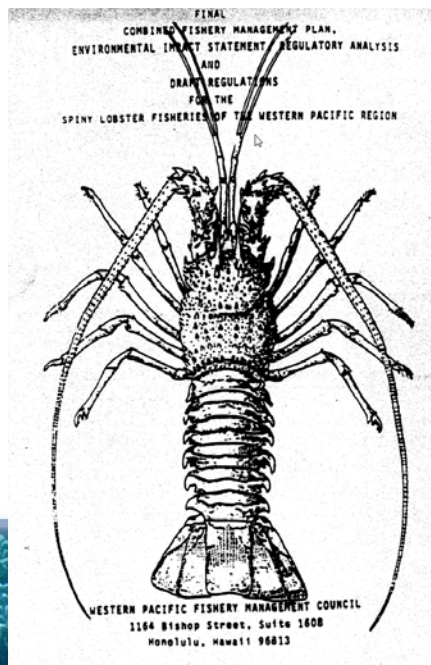
Western Pacific Fishery Management Council
1164 Bishop Street, Suite 1405
Honolulu, Hawaii 96813
(808) 523-1368

Who we are, what we do.....

*Final
Fishery Management Plan
For Coral Reef Ecosystems of
The Western Pacific Region*



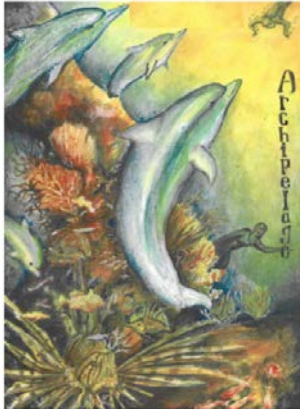
October 2001
Volume I-III
Western Pacific Regional Fishery Management Council



COMBINED FISHERY MANAGEMENT PLAN, ENVIRONMENTAL ASSESSMENT AND
REGULATORY IMPACT REVIEW FOR THE
BOTTOMFISH AND SHAMOUNT GROUNDFISH FISHERIES OF THE WESTERN PACIFIC REGION
FINAL
MARCH 1986
Western Pacific Regional Fishery Management Council
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Fishery Ecosystem Plan for the Hawaii Archipelago



Western Pacific Regional Fishery Management Council
1164 Bishop Street, Suite 1400
Honolulu, Hawaii 96813
December 19, 2008



Fishery Ecosystem Plan for the American Samoa Archipelago



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1164 Bishop Street, Suite 1400
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December 19, 2008



Fishery Ecosystem Plan for the Mariana Archipelago



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Fishery Ecosystem Plan for Pacific Pelagic Fisheries of the Western Pacific Region



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December 19, 2008



Fishery Ecosystem Plan for the Pacific Remote Island Areas



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December 19, 2008

- Magnuson-Stevens Fishery Conservation and Management Act
 - Management of stocks in the EEZ
 - 2007 re-authorization required Annual Catch Limits
 - Shift from input control to output control
 - Data-poor stocks very problematic
- Data-poor situation
 - Lacking basic fishery information to develop stock assessments
 - X *Reliable total catch estimate*
 - X *Accurate CPUE information*
 - X *Locally derived life history parameters*
- Council recognition of additional data collection program to augment the current data gaps





- Data Workshop – October 24-25, 2006
 - Recognized the importance of more life history information to support stock assessments
- 2008 - Council hired a contractor to extract life history samples at GFCA
- Fishery Data Collection Committee meeting – July 19, 2009
 - Council reported that the funding for the biological sampling at the Guam Coop will end
 - Reported that a BioSampling Training will be conducted next month
- BioSampling Training – August 10-12, 2009
- Data Workshop – November 17-19, 2009
 - Reported establishment of a BioSampling Program under PIFSC



Origin and evolution





- Training and capacity building (partnership with PIFSC)
 - 2009 BioSampling Workshop
 - Experts provided by PIFSC – Meagan Sundberg, Karen Underkoffler
- Provided seed funding to initiate the project (CRCP Grant)
- Provided funding to support manpower
 - GFCA – 1 lead sampler; 1 assistant (2007-2012)
 - MES – 1 sampler (2011-2014)
- Supported processing of gonad samples from CNMI (2 spp.)
 - Slice, fix, mount – UH Medical School
 - Slides forwarded to PIFSC LHP
- Provided additional resources to augment CNMI market sampling through the Territory Science Initiative



What's our



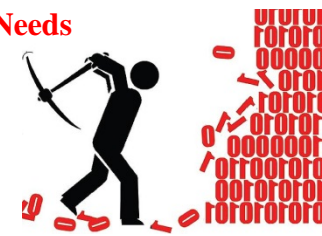
in the BioSampling Program?

Support and Partnership

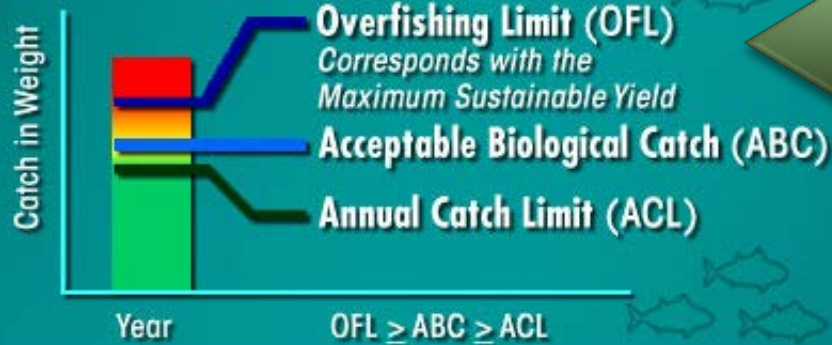


1 Funding support





Annual Fish Harvest



Stock assessments

- **A**bundance
- ✓ **B**iology
- ✓ **C**atch

POINT 97 Digital Deck USVI & Puerto Rico

Signed in as dan (admin) Sign Out

506

TOTAL REPORTS

506

NEED REVIEW

0

FLAGGED

OVERVIEW: ACL PROGRESS

CATCH REPORT DATA

REVIEW CATCH REPORTS

ADD CATCH REPORT

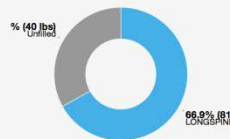
Search

Region St. Croix St. Thomas & St. John

SQUIRRELFISH

JACK

GRUNT



SQUIRRELFISH

JACK

GRUNT

PORGY

BOXFISHES

66.9%

3.0%

0.7%

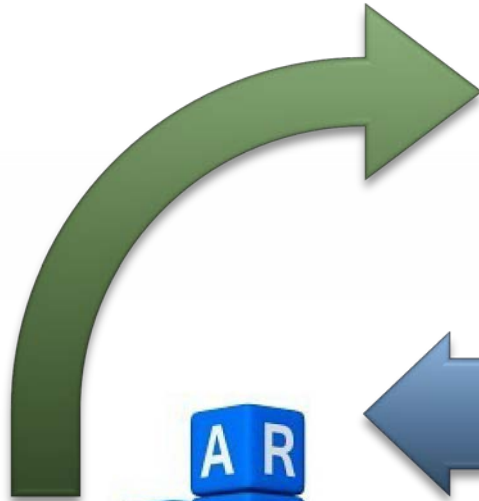
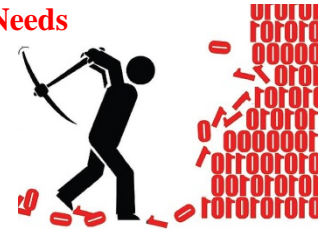
0.2%

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Near-real time monitoring of catch:

- Survey expansion estimates
- ✓ Commercial sales data
- Non-commercial data collection





Fishery performance

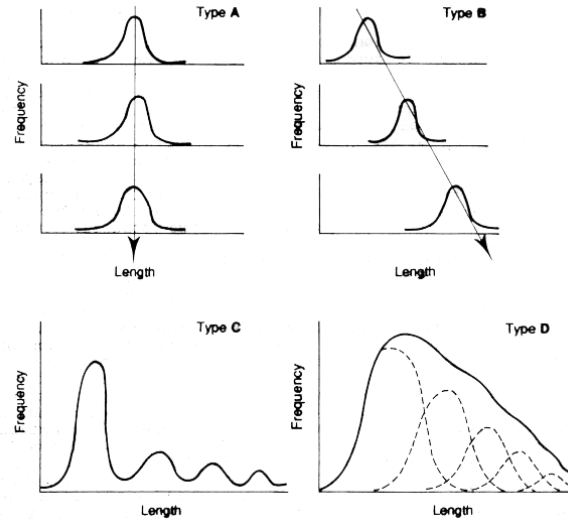
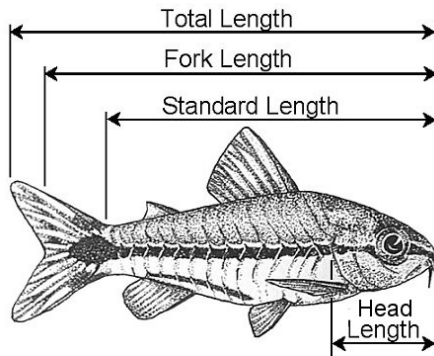
Ecosystem conditions

Data integration

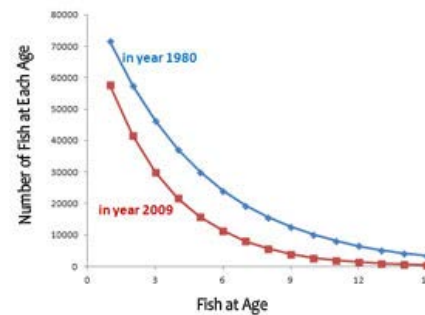
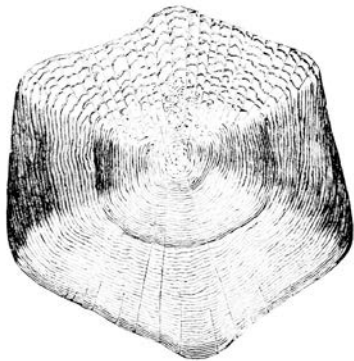
- Fishery parameters
 - Catch, Effort, CPUE
 - Participants
 - Catch composition
- Stock status determination
- Biological/Ecological data
- Environmental parameters
- Climate indicators
- Protected species
- Habitat
- Socio-economic drivers
- Fishery trends as a function of the ecosystem



BioSampling: Life History Component



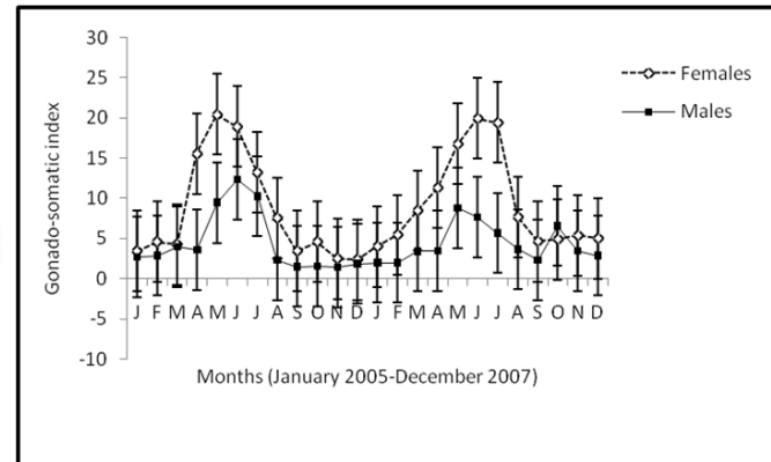
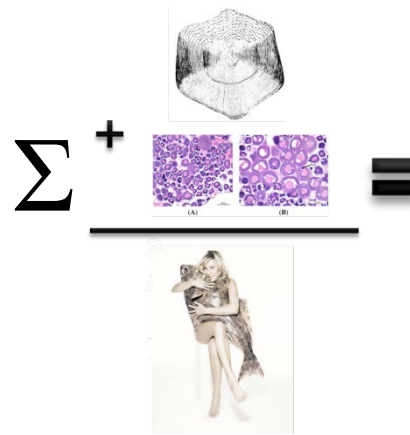
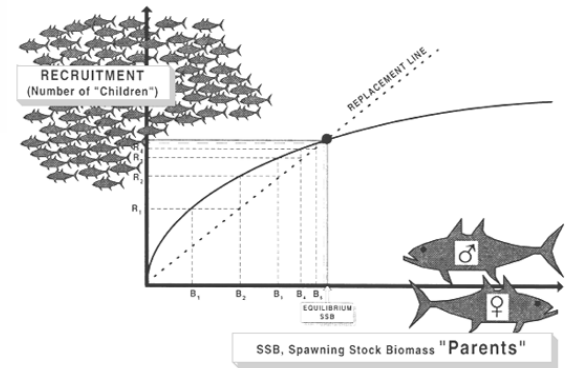
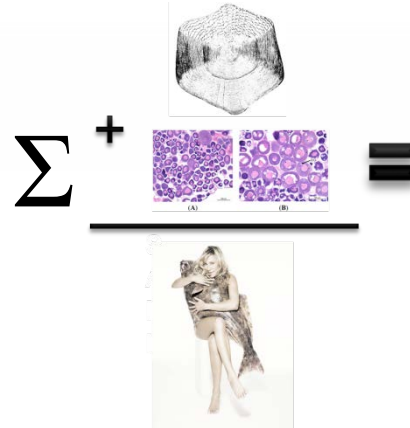
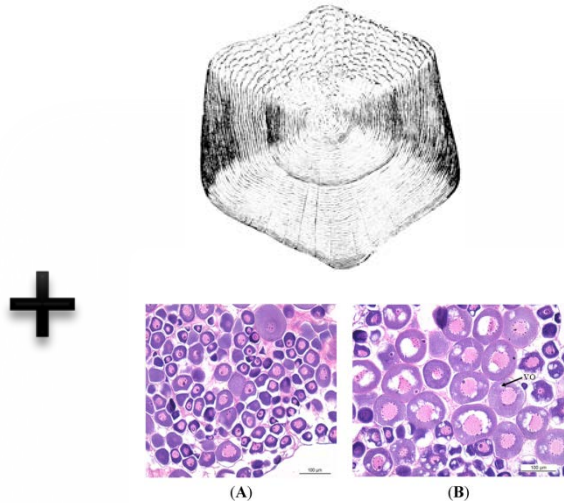
Length-based assessments (e.g. Nadon et al. 2015)



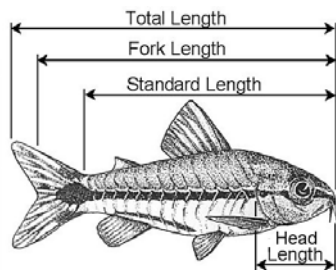
Age-structured models



BioSampling: Life History Component

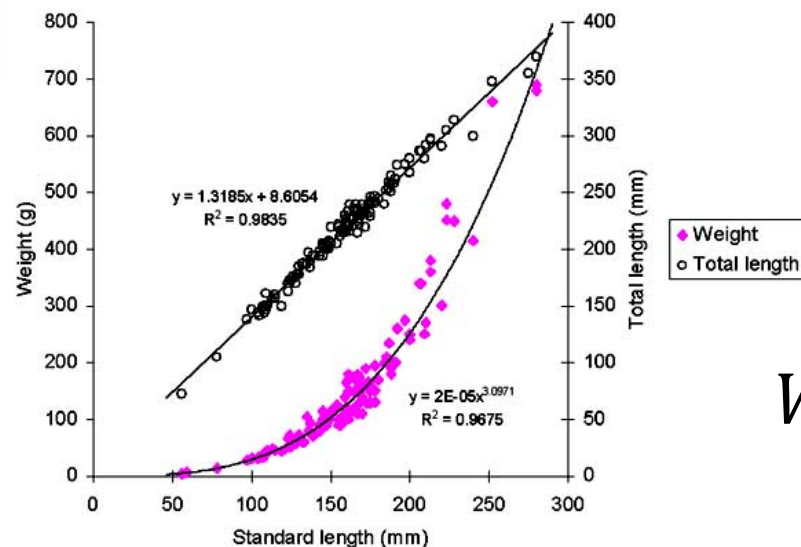


BioSampling: Life History Component



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$$W = aL^b$$

Council recommendation 154th CM (06/2012):

Requested PIFSC WPacFIN to conduct a pilot study to test the **potential effect** of the **new a and b values** from the **BioSampling Program** and determine if there are **changes** in the temporal trend in the **catch** time series from the **creel survey data**



BioSampling: Market Sampling Component



Spear fishing catch estimates

- Temporal overlap of surveys vs fishing occurrence
- Estimate of total catch
- Species resolution
- Back correct the creel estimates



BioSampling: Market Sampling Component



Comparison of Selected Coral Reef MUS Bio-Sampling Weights to the 2012 Annual Catch Limits

Selected Management Unit Species	2012 CNMI Annual Catch Limits (pounds)	2011 Saipan Jan to Dec <i>Sampled¹ Reef Fish Landings by Spear (total pounds sampled)</i>	2012 Saipan Jan/Feb/Mar <i>Sampled² Reef Fish Landings by Spear (total pounds sampled)</i>
Lethrinidae - emperors	27,466	1,760	367
Acanthuridae – surgeonfish 	6,884	6,990	1,466
Serranidae - groupers	5,519	634	92
Mullidae - goatfish 	3,670	1,505	428
Scaridae - parrotfish 	3,784	5,898	759
Siganidae - rabbitfish	2,537	1,527	321

¹ For 2011, 20% of total reported landings (from Daily Vendor Log program) were sampled

² For 2012, 20% of total reported landings (from Daily Vendor Log Program) were sampled

Preliminary data – not to be cited

Significant underestimation

- Surveys miss spear method
- ACL based on creel data
- BioSampling 2012 (3 mo)
 - Surgeon = 22%
 - Parrot = 20%





150th CM 03/2011: the Council -

- Supported the following prioritized proposals to improve the fishery data collection for stock assessments in the Marianas
 - Regarding bolstering the BioSampling Program, supports the contracting of 1 FTE to support the existing **BioSampling** staff (Eric Cruz) in Guam
 - Directed staff to work with fishery research agencies and organizations to provide reports on the outcomes of fishery research in Guam and CNMI (i.e. **BioSampling data results**, cooperative research, economic survey, etc) at future Advisory group meetings as available.

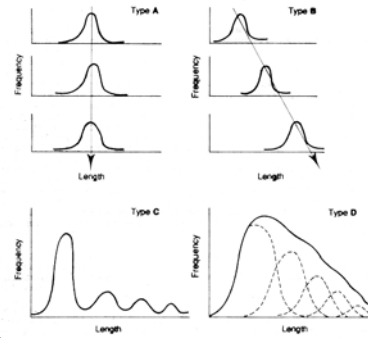
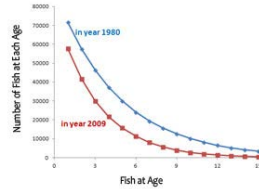
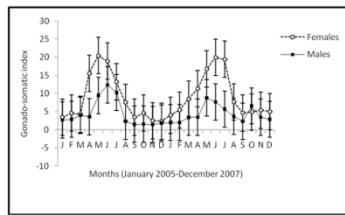
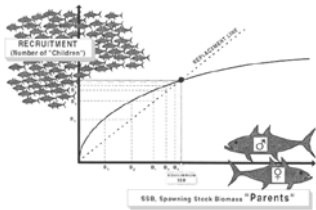




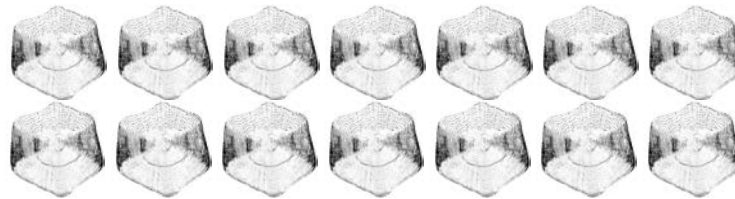
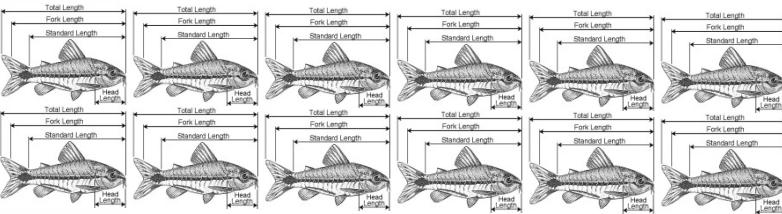
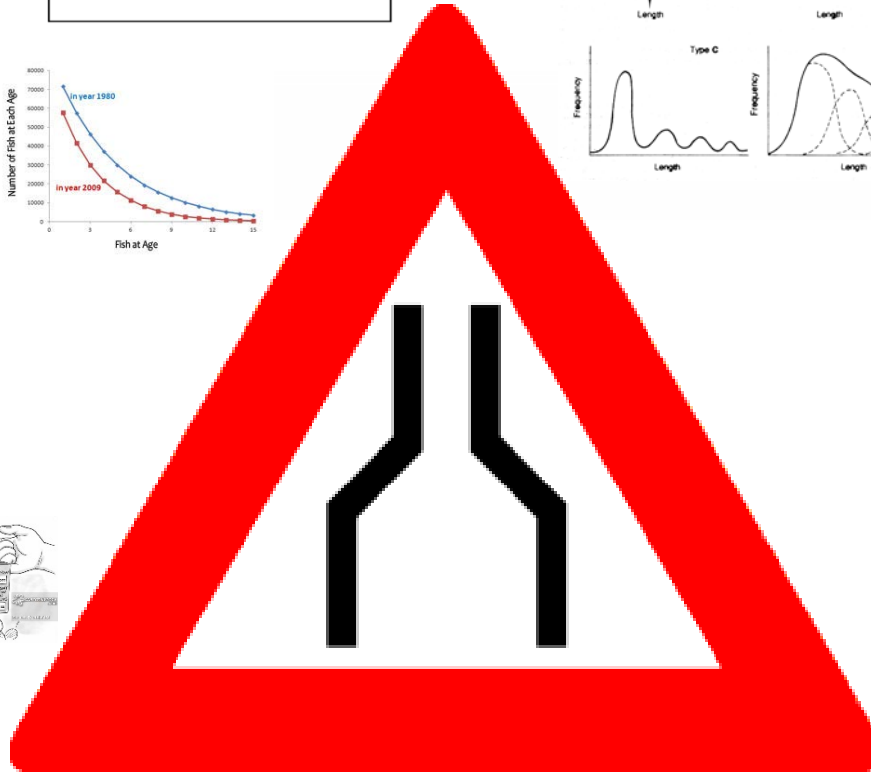
153rd CM 03/2012: the Council -

- Recommended NMFS provide funding to support
 - development/support of other survey methods to cover species and fishing methods not adequately represented by the existing creel survey design (e.g. **BioSampling**, Commercial Receipt Books etc.)
 - directed staff, in collaboration with NMFS PIFSC and local fishery agencies, to continue revising the ACLs for fishing year 2013. This collaborative effort should also include utilizing other data streams (e.g. **BioSampling**, commercial receipt books, etc) in developing future ACL specifications.
 - Recommended NMFS PIFSC provide its **BioSampling** Programs in the Marianas with additional support to further engage the community to obtain information important to fisheries management as well as participate in educational and outreach opportunities





Putting it together



Putting it together



The Council believes.....

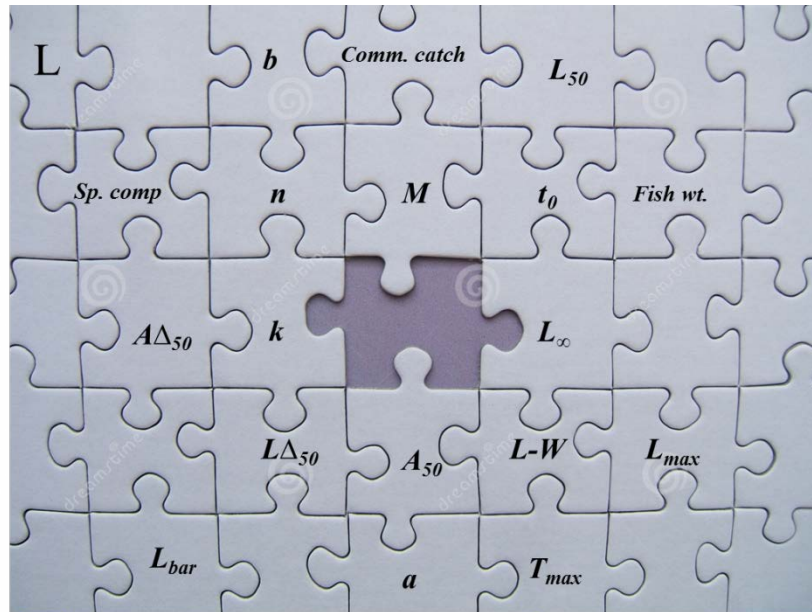
Putting it together



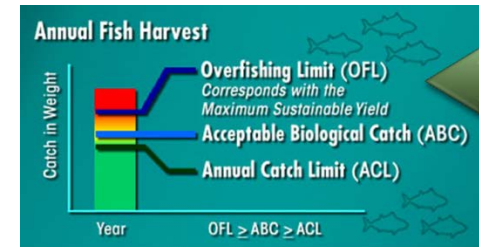
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Stock assessments

- **A**bandance
- ✓ **B**iology
- ✓ **C**atch



Question?

