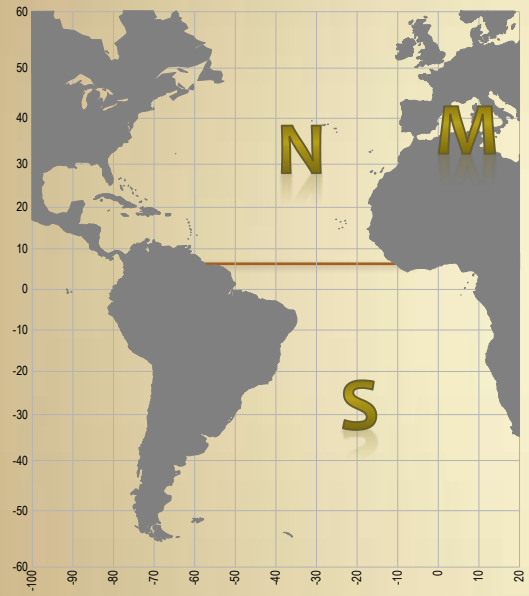
Panel 2

ALB North Atlantic
ALB Mediterranean
BFT

Panel 2: Items to be discussed

- Albacore (ALB)
  - North Atlantic (assessed in 2009)
  - **Mediterranean (assessed in 2011)**
- Bluefin tuna (BFT)
  - Eastern Atlantic and Mediterranean (assessed in 2010)
  - Western Atlantic (assessed in 2010)
- Responses to Commission's requests
  - 18.3 Exploring operationally viable technologies and methodologies for determining the size and biomass at the points of capture and caging [Rec. 10-04]
  - 18.4 Reporting on scientific aspects of national observer programs on the basis of the information provided by CPC [Rec. 10-04]
- General recommendations to the Commission

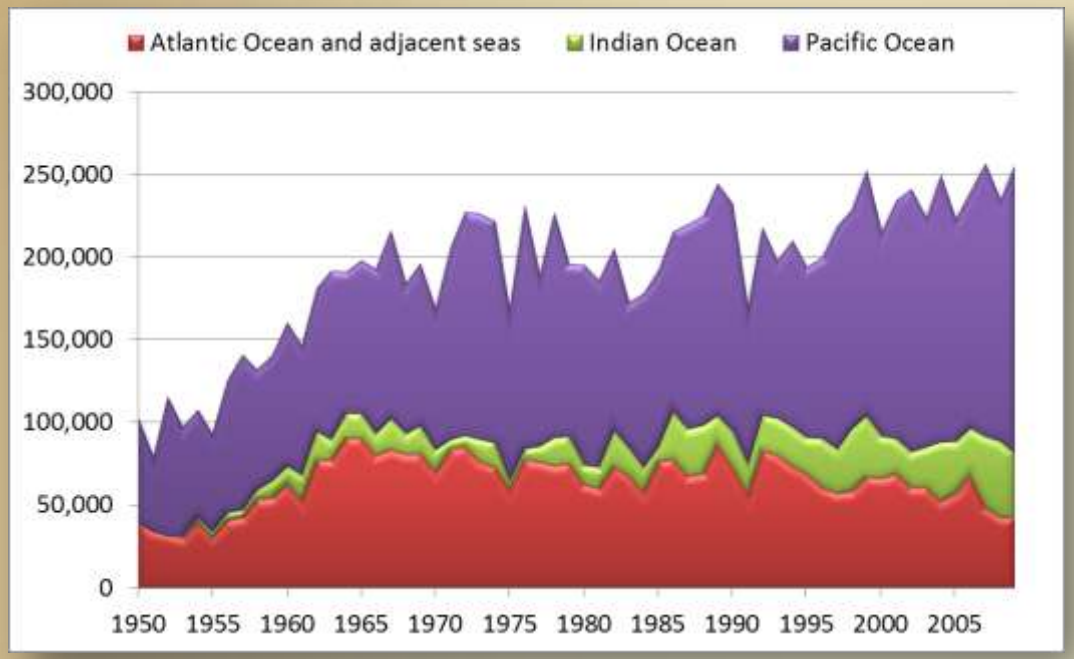
Albacore

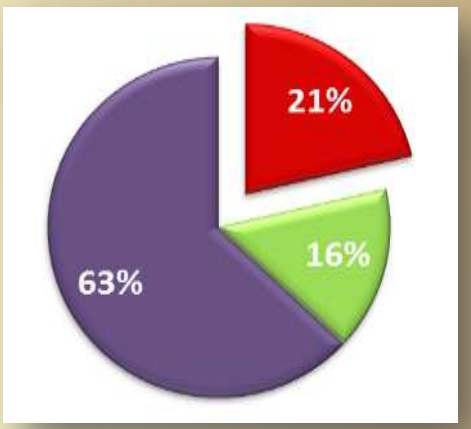


3 management units

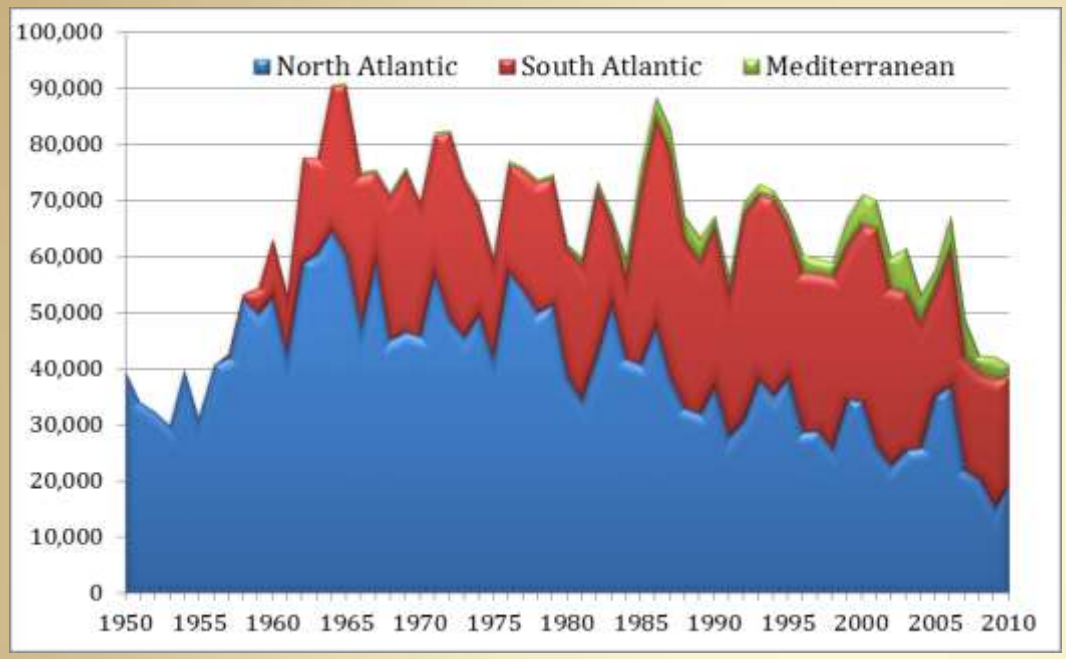
Albacore, Atún blanco, Germon	
Scientific name	*Thunnus alalunga*
Distribution	Widely distributed in temperate and tropical waters; from 45-50 °N to 30-40 °S (less abundant in surface waters between 10°N and 10°S)
Spawning grounds	In subtropical western areas of both hemispheres and throughout the Mediterranean Sea (spring and summer)
Maturity	Atlantic: 90 cm (age 5) / Mediterranean: 62 cm (age 3)
Life span	Atlantic: 15 years / Mediterranean: 9 years
Maximum size	Atlantic: 130 cm (40 kg) / Mediterranean: 95 cm (15 kg)
Natural mortality	Assumed M=0.3

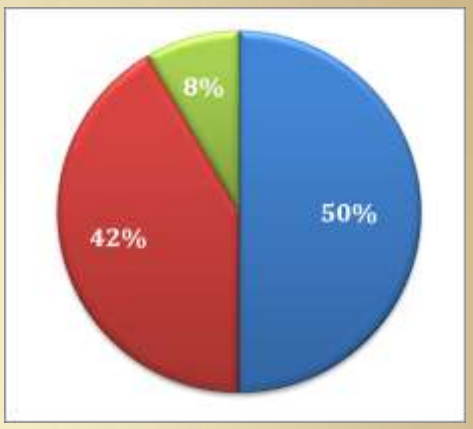
- Environmental variability: potential impact on ALB stocks



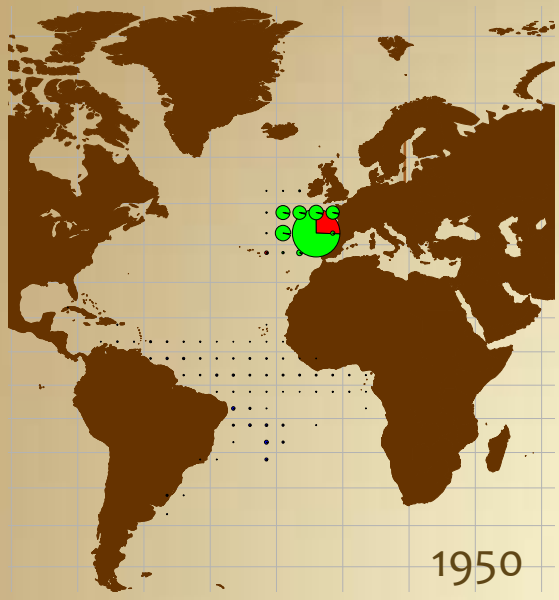


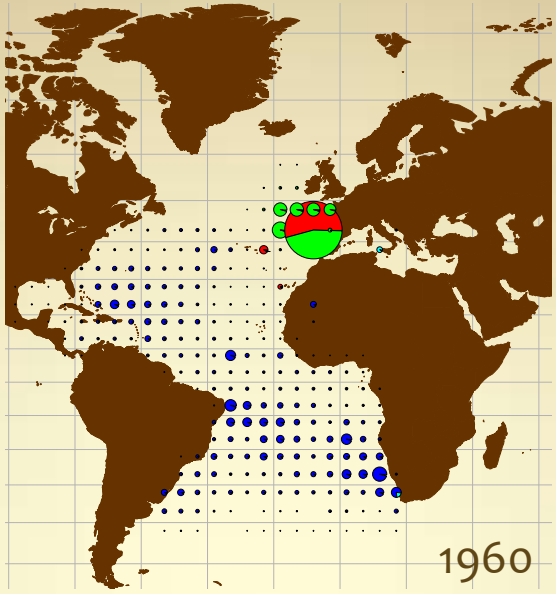
- Atlantic & Mediterranean ALB represents **21% of the world production** of ALB (average years 2005-2009).

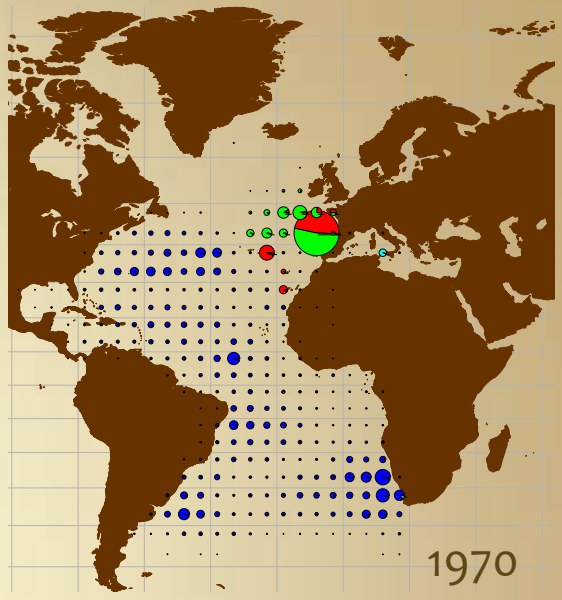


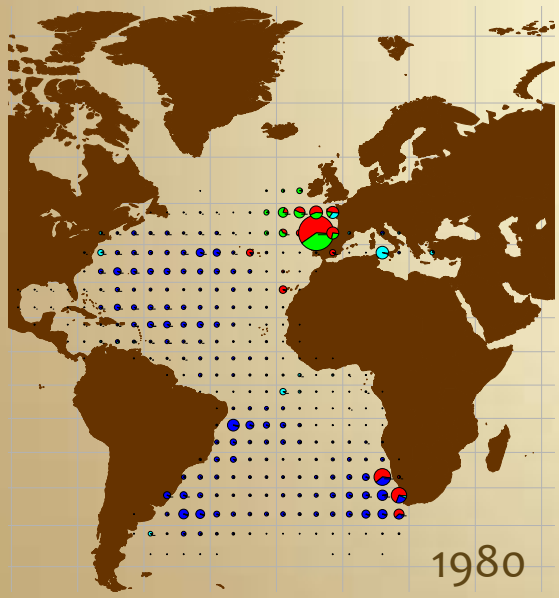


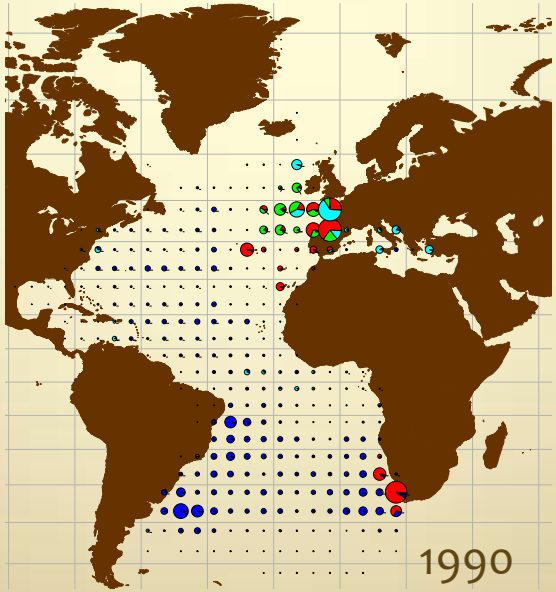
- **North Atlantic** production is about **half** the Atlantic and Mediterranean level (average years 2005-2009)**.**

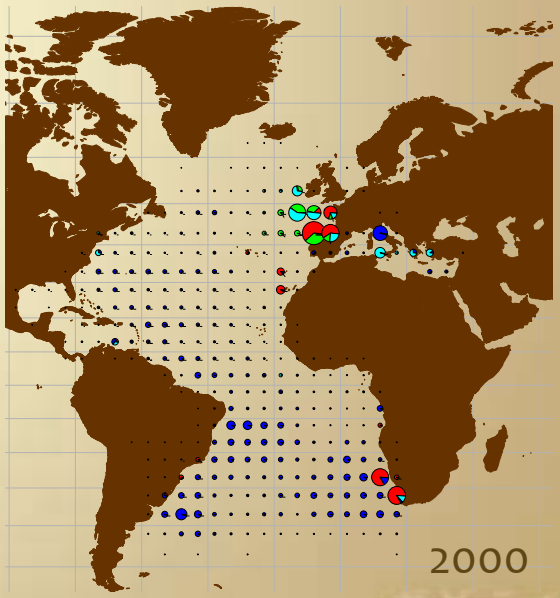








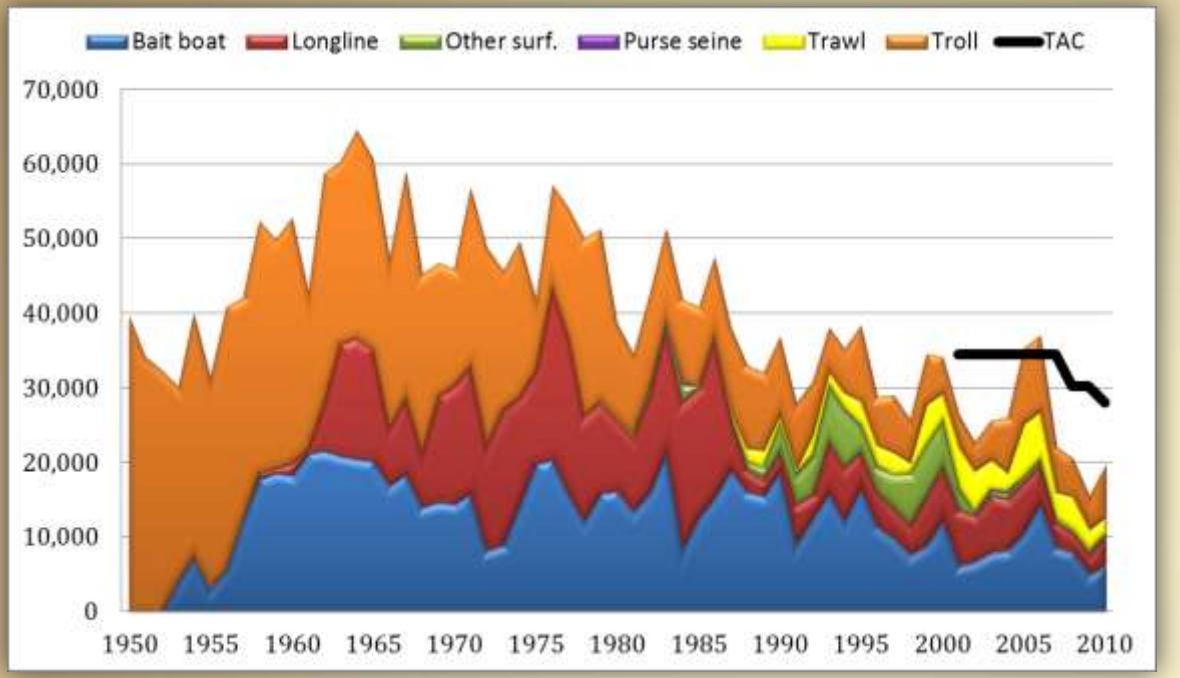




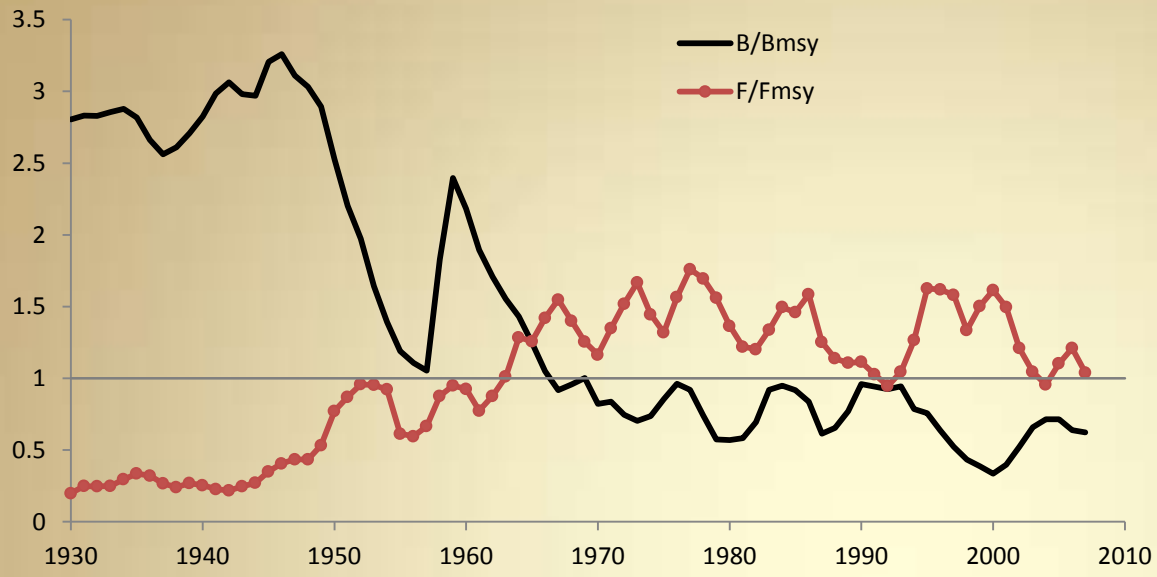
BB TR LL others

North Atlantic albacore

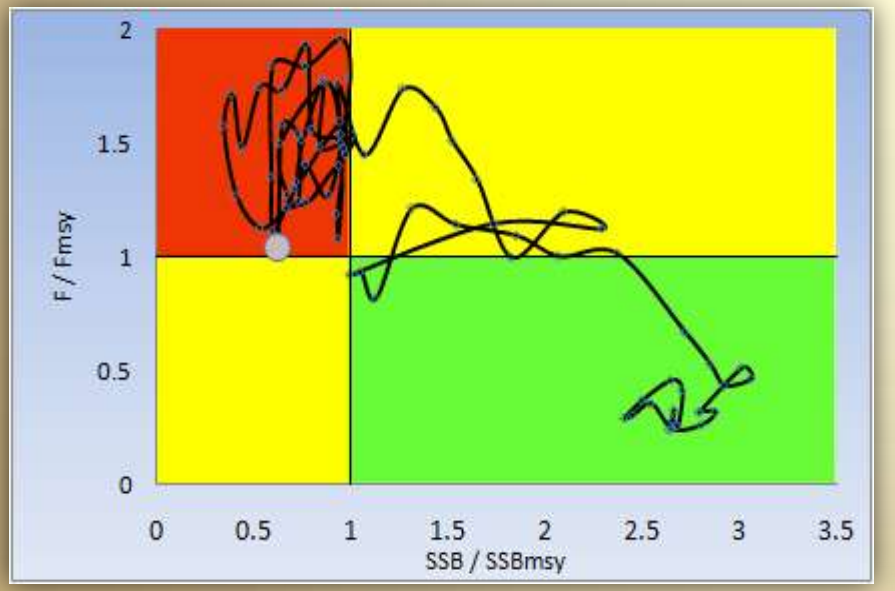
Last assessment: 2009

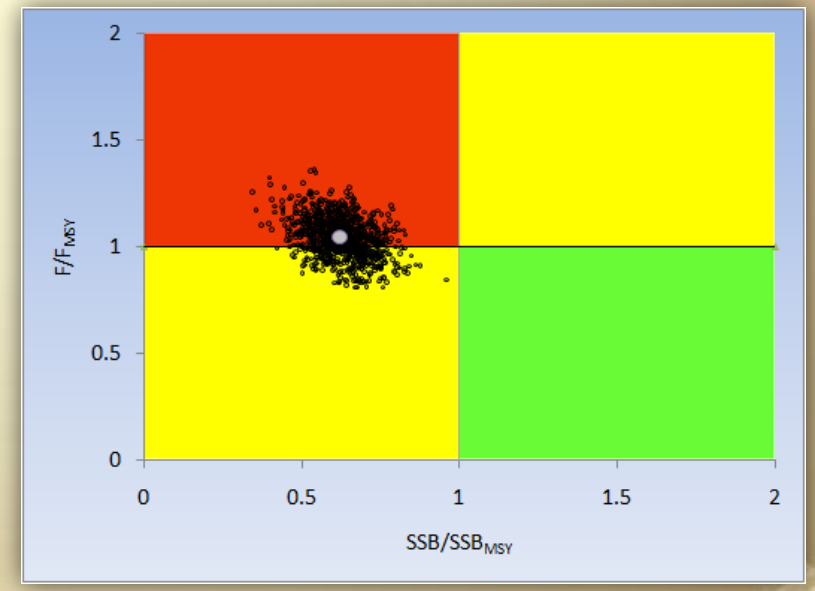


- Catches peaked in the early 1960s; in decline since then.
- Surface gears (TR, BB, MWT): juveniles, >80% annual catch in recent years.
- LL: adults
- Both surface & LL effort has progressively decreased.
- Recent catches have generally been below TAC.



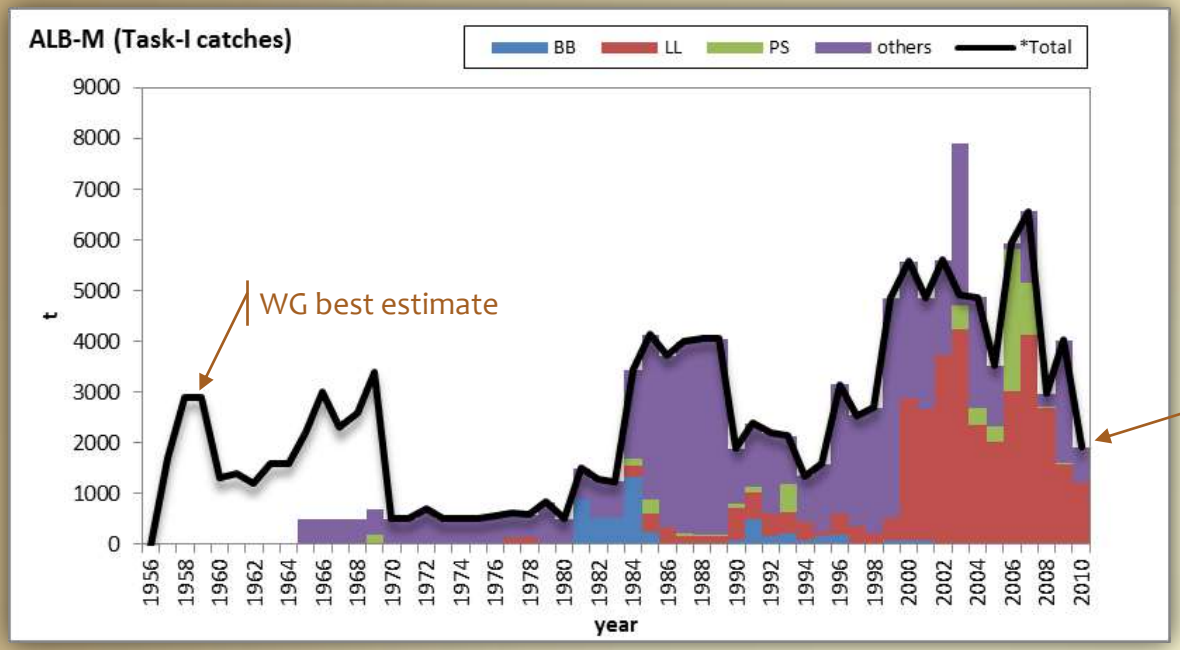
- B_{2007}/B_{MSY} ~ 0.6
- F_{2007}/F_{MSY} ~ 1.0
- TAC: 30,200 t (2008-09)
  28,000 t (2010-11)
- 2009 catch: 19,649 t





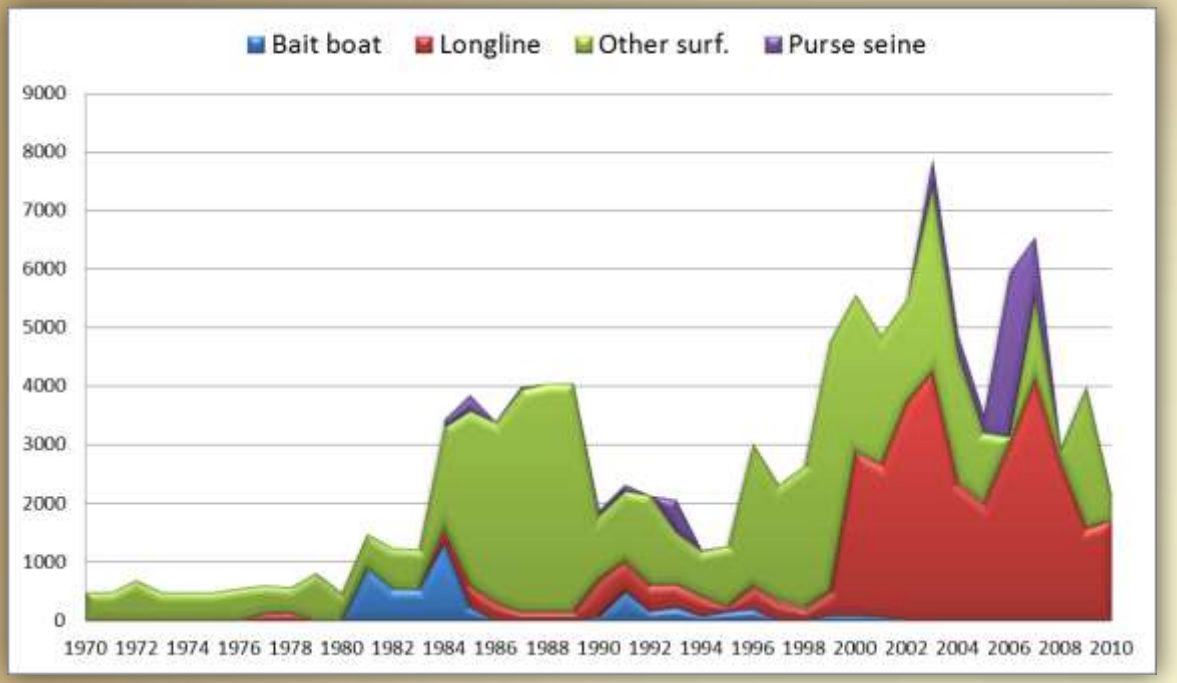
Mediterranean albacore

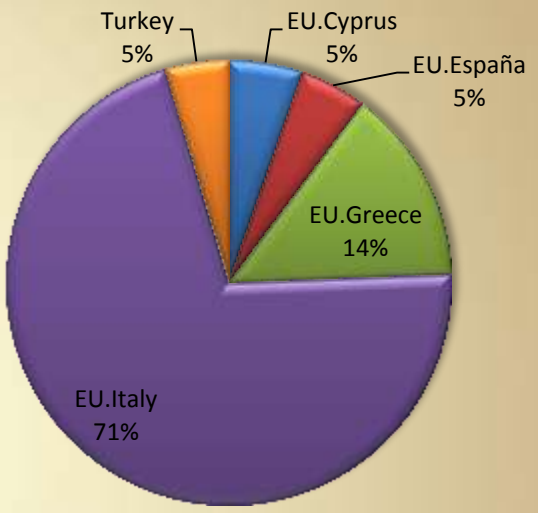
Last assessment: 2011



2,123 t in 2010

- Catch series was estimated considering additional sources of information (Eurostat,…)
- This allowed to identify some catches that were not included in the ICCAT DB
- In 2010, the reported landings were 2,123 t, a 47% decrease from 4,021 t taken in 2009





% average catch in the 2000 decade

- The majority of the catch came from LL fisheries.
- EU: 95% of the reported catches in the last decade.
- EU-Italy is the main producer of Mediterranean ALB and in 2010 the Italian catch was 1,109 t, a 60% reduction from its 2009 catch.

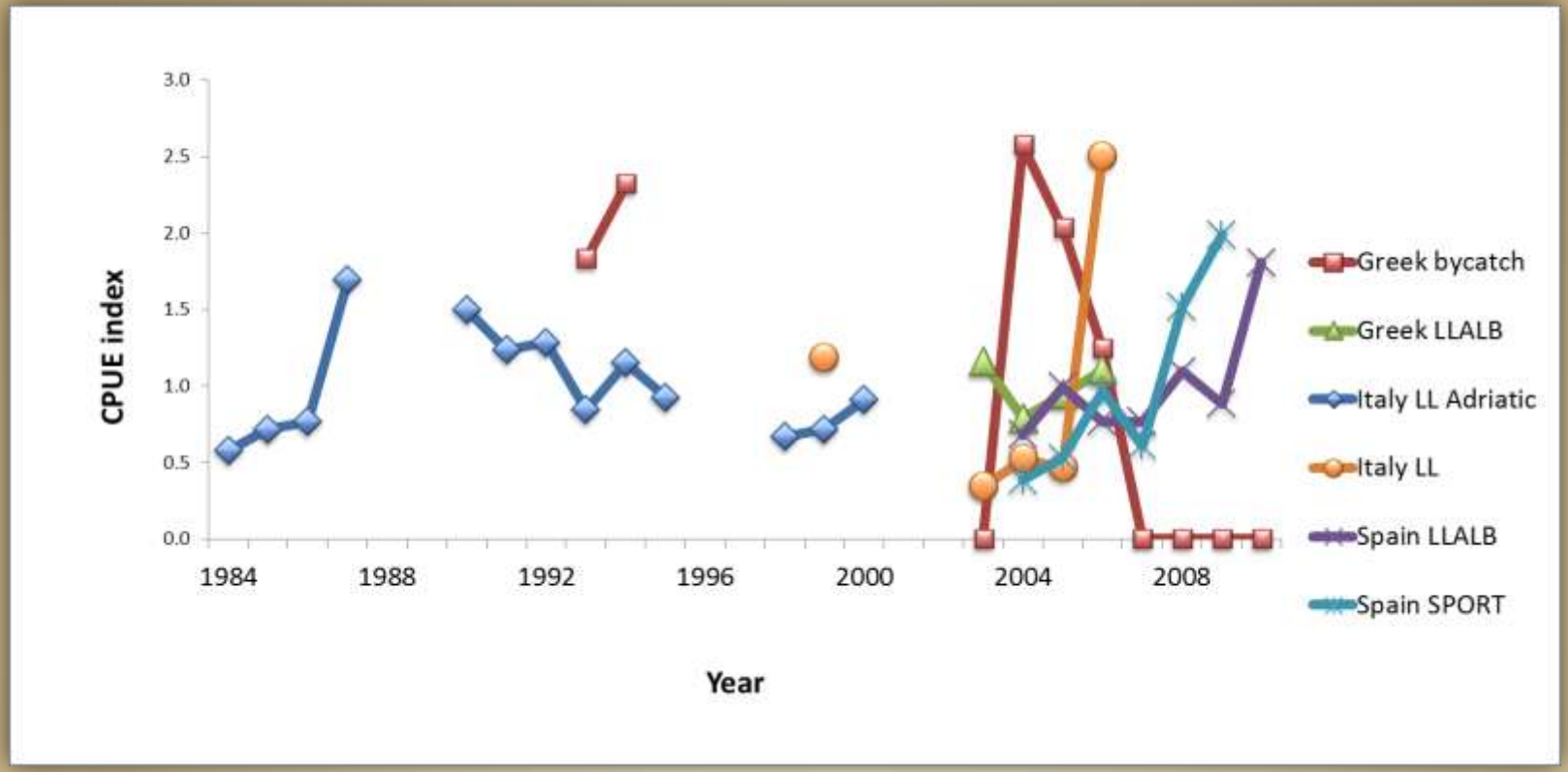
Data and methods

- **First stock assessment** for Mediterranean ALB.
- Task I (catches): 1965- 2010
- Task II (catch & effort; size samples): sparse & incomplete

- The methods used were adapted to the "**data poor**" category of this stock.
- Three assessment methods:
  - ✓ Length- converted catch curve analysis (LCC)
  - ✓ Length based yield per recruit
  - ✓ Bayesian Surplus Production Model (BSP)

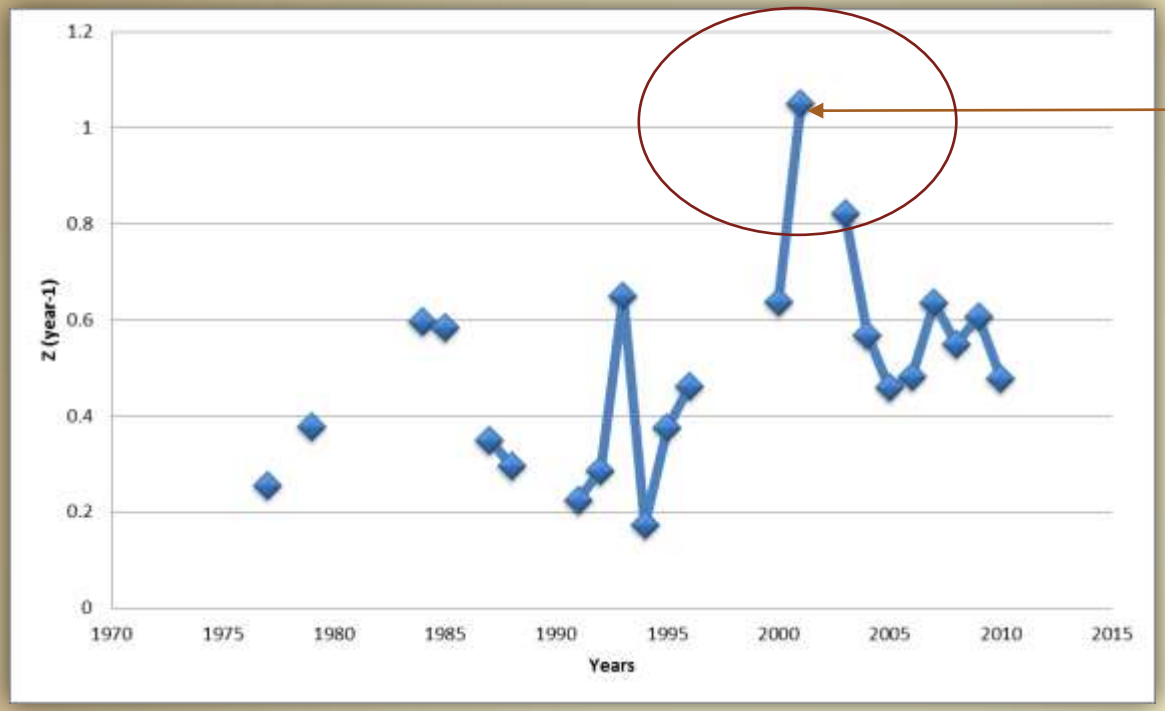
- The more data-demanding methods applied, such as a production model, gave unrealistic results.

CPUE series



- Some CPUE series for Mediterranean fisheries became available .
- Discontinuous and highly variable, with no clear trend.
- Since they are mostly very short, and there is little overlap between time series, they may or may not accurately characterize biomass dynamics in Mediterranean albacore.

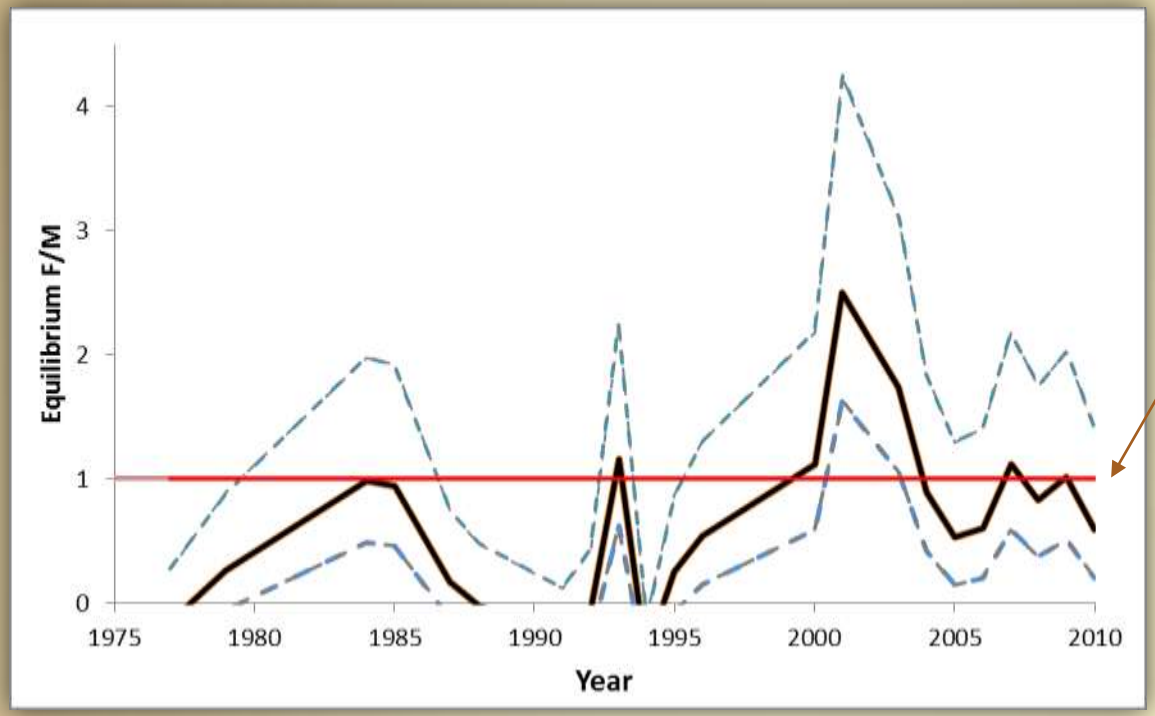
Length converted catch curve analysis



Higher values at the beginning of the 2000's

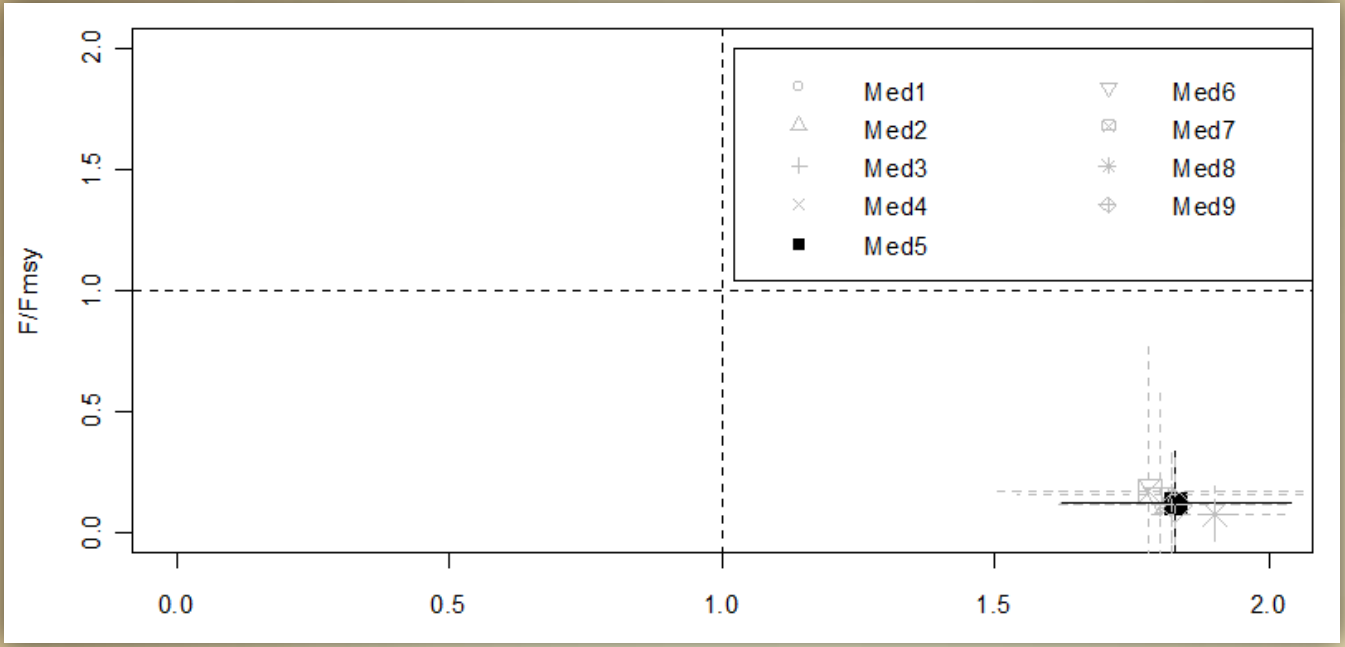
Time series of total mortality (Z) estimates

Length converted catch curve analysis



- Recent fishing mortality levels appear to have been reduced from those of the early 2000s, which were likely in excess of F_{MSY}, and might now be at about or lower that level.

Bayesian Surplus Production



- All BSP runs showed a population that had not been significantly depleted since the beginning of the fishery (consistent with the fact that the CPUE series are extremely variable, and do not show a clear trend over time).
- These model results are **highly uncertain**.

Assessment Summary

- The results of the 2011 assessment (based on the limited information available and in simple analyses) point to a **relatively stable pattern for albacore biomass** in the recent past.

  (very little quantitative information is available to SCRS for use in conducting a robust quantitative characterization on biomass status relative to Convention Objectives)

- Recent fishing mortality levels appear to have been reduced from those of the early 2000's, which were likely in excess of F_{MSY}, and might now be **at about or lower than F_{MSY} level.**

Outlook

- Due to the fact that the management advice for the Mediterranean stock was based on catch curve analysis and due to the **limited quantitative information** available to the SCRS, **projections for this stock were not conducted.**
- As a result, future stock status in response to management actions could not be simulated.
- The outlook for this stock is thus **unknown.**

Effects of current regulations

There are **no ICCAT regulations** directly aimed at managing the Mediterranean albacore stock.

Management recommendations

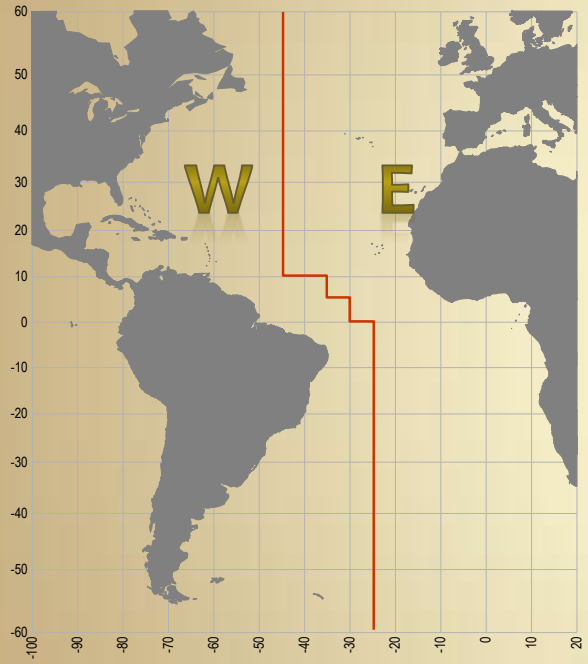
- **Very little quantitative information** is available to SCRS for use in conducting a robust quantitative characterization on biomass status relative to Convention Objectives.

- The SCRS ability to provide quantitative management advice will be seriously impeded until the data that might exist at CPC levels become available either through recovery of historical data or institution of adequate fishery monitoring data collection programs.

- Recent fishing mortality levels appear to have been reduced from those of the early 2000s, which were likely in excess of F_{MSY}, and might now be at about or lower than that level.

- However, there is considerable uncertainty about this and for this reason, the Commission should institute management measures designed **to limit increases in catch and effort directed at Mediterranean albacore.**

Bluefin tuna

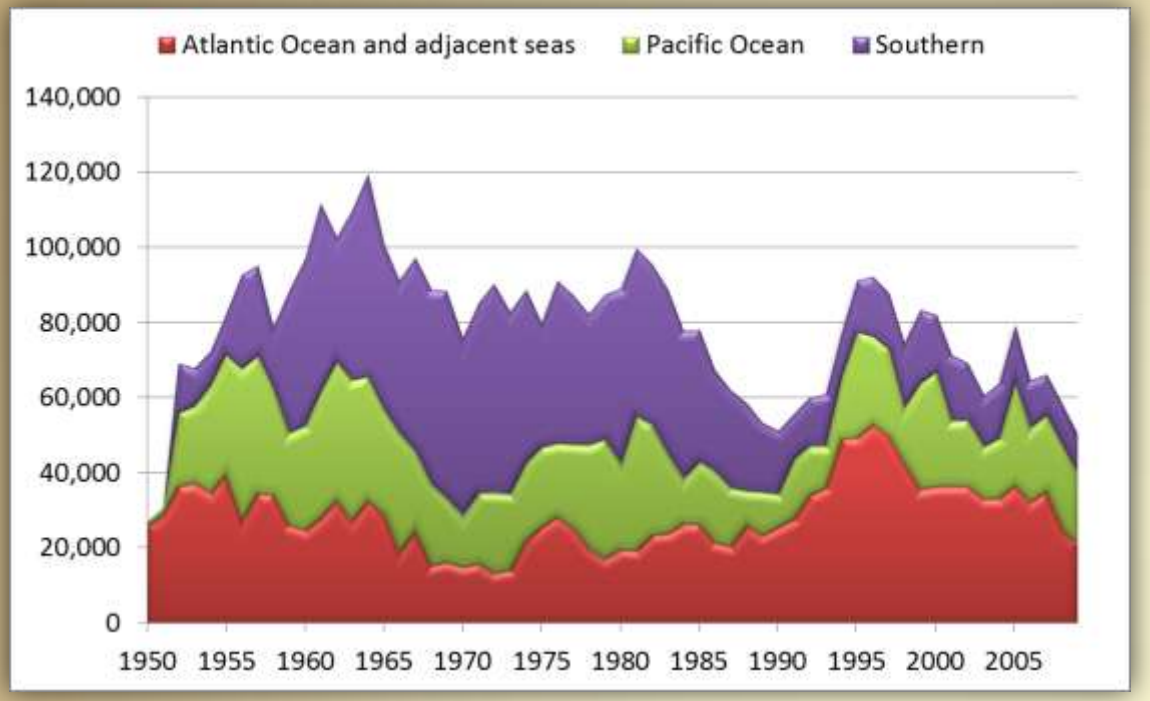


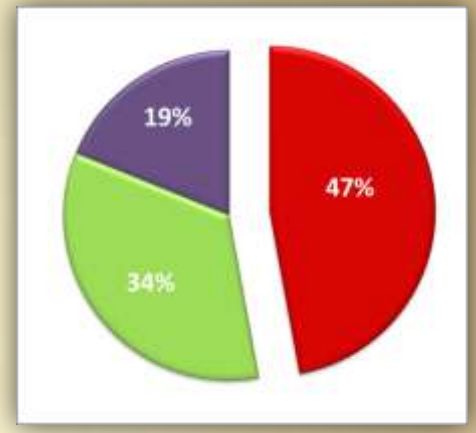
2 management units

Bluefin tuna, Atún rojo, Thon rouge	
Scientific name	*Thunnus thynnus*
Distribution	Pelagic ecosystem of the entire North Atlantic and its adjacent seas, primarily the Mediterranean Sea.
Population structure	Still unknown; several hypotheses: from 2 sub-populations with mixing to several sub-populations (metapopulation)
Spawning grounds	Warm waters (> 24°C) of specific and restricted locations: around the Balearic islands, Sicily, Malta, Cyprus and some areas of the Gulf of Mexico. (May-June)
Maturity	East: 25 kg (age 4) / West: 145 kg (age 9)
Life span	40 years
Maximum size	427 cm (726 kg)
Natural mortality	East: [0.49, 0.24, 0.24, 0.24, 0.24, 0.20, 0.175, 0.15, 0.125, 0.10] West: 0.13

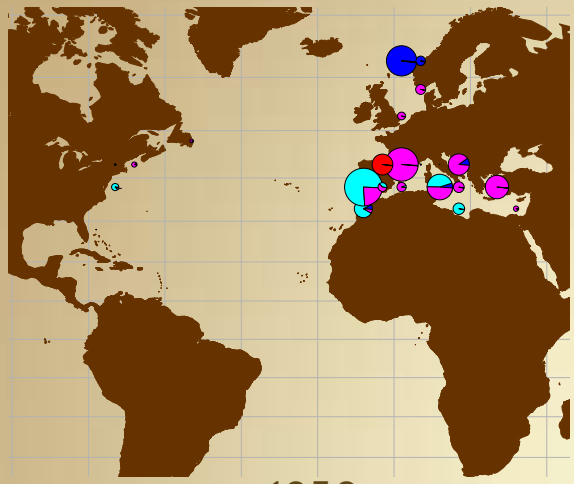
Biology: new information in 2011

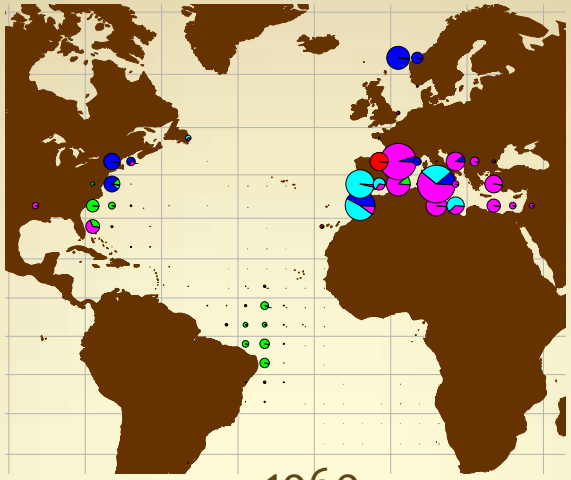
- **Biology**: spawning (in cages), feeding (in different areas)
- Direct **ageing** on otoliths and dorsal fin spines (detailed protocol for fin, collaboration S/C)
- **Biometry** : length-weight relationships (seasonal effects), condition factor (link to climate), growth curves (differences in L_∞), conversion factors (guts)
- Conventional and electronic **tagging** experiments in both the East Atlantic and Mediterranean (confirmation of high residency in the Mediterranean for some sub-populations)
- **Stock structure** (use of otolith microchemistry to distinguish fish of different origins)
- **Pilot studies** on the use of stereoscopic camera to retrieve length composition of the catch
- Results from the **GBYP** to be presented later on

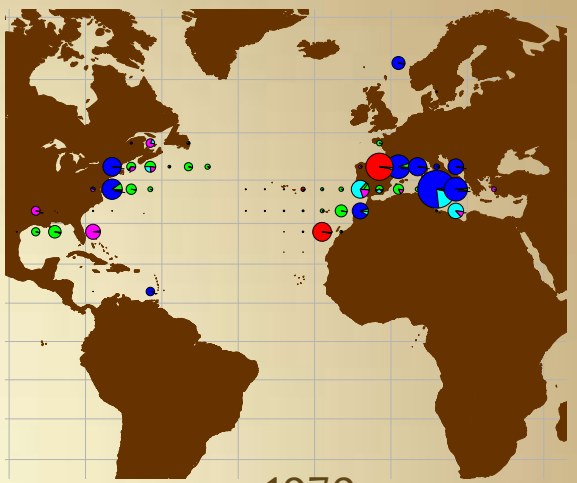


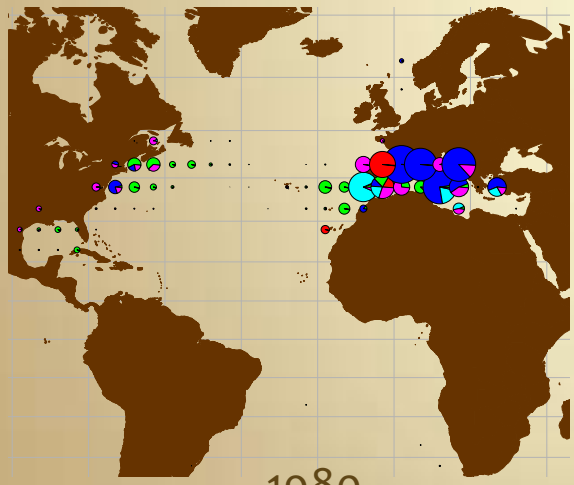


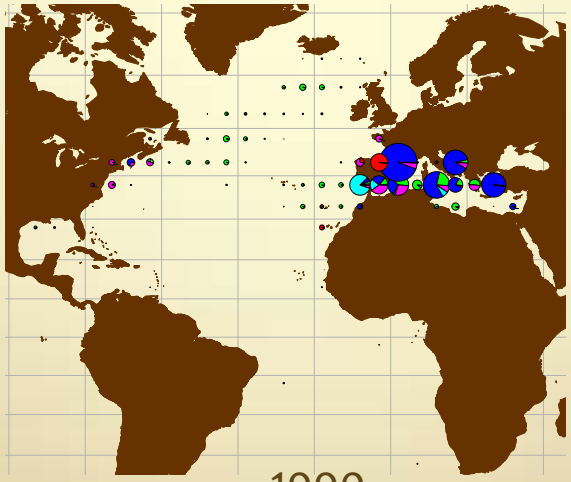
- Atlantic & Mediterranean BFT represents **47% of the world production** of BFT (average years 2005-2009).
- Most catch is now made in the Mediterranean.

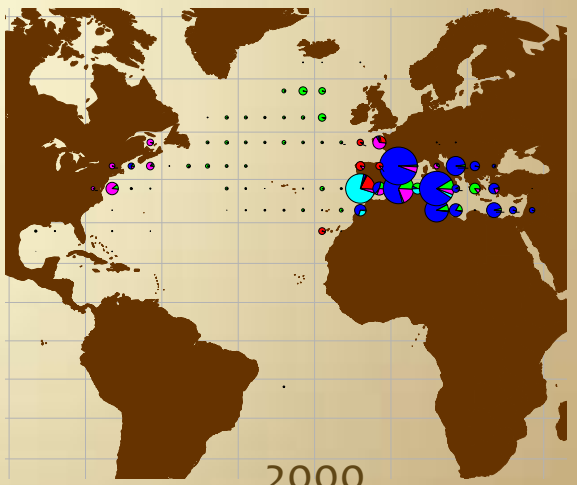








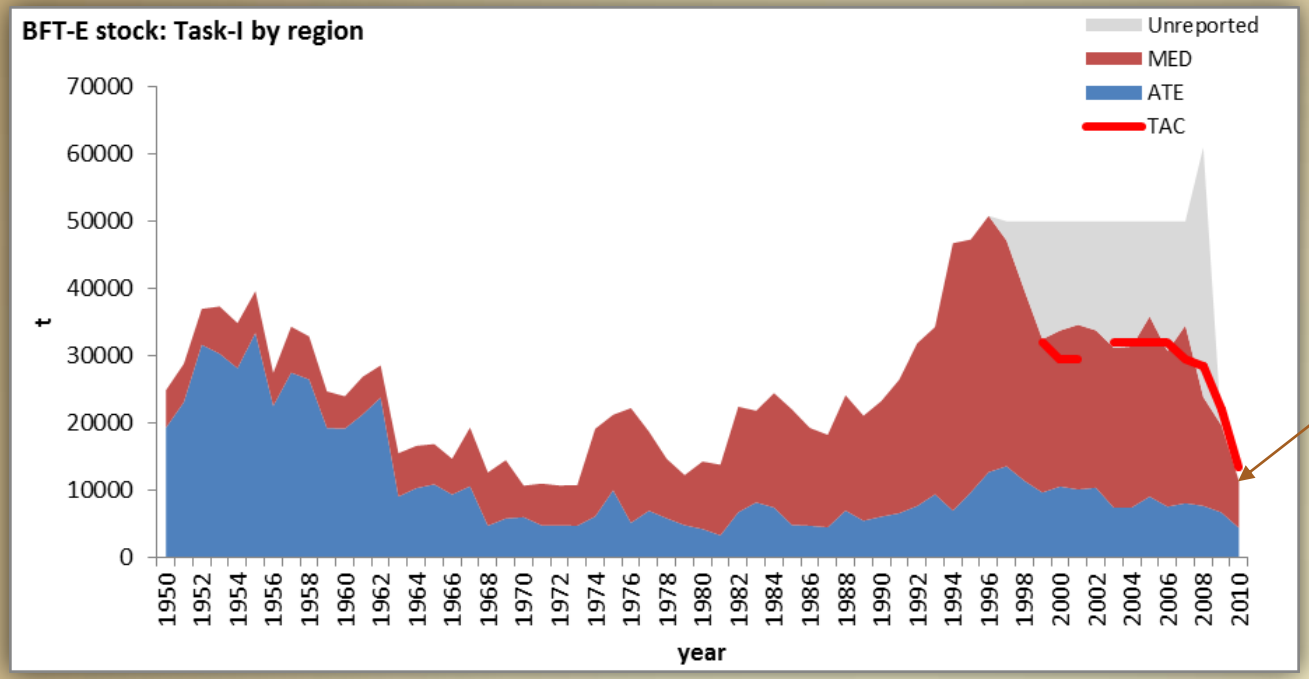




BB LL PS TP others

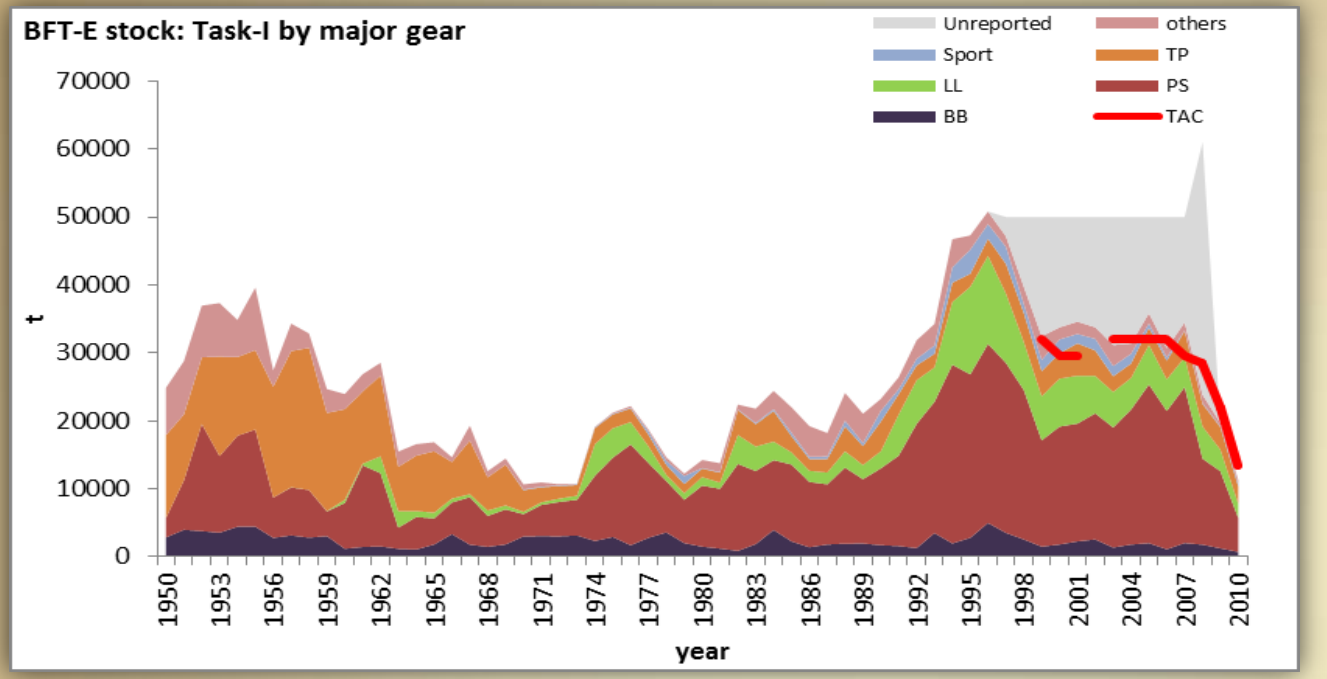
East Atlantic & Mediterranean Bluefin Tuna

Last assessment: 2010



11,294 t in 2010

- Strong decrease in the catch, mostly in the Mediterranean Sea, in **response to the rebuilding plan** and control enforcement since 2008.
- However, the catch estimates that do not take into account for **potential IUU catch**.
- The **2010 BFTE catch = 11,294 t** (<< 2010 TAC), but 2010 BCD information still incomplete.


BFT-E stock: Task-I by major gear
Unreported
others
Sport
TP
LL
PS
BB
TAC
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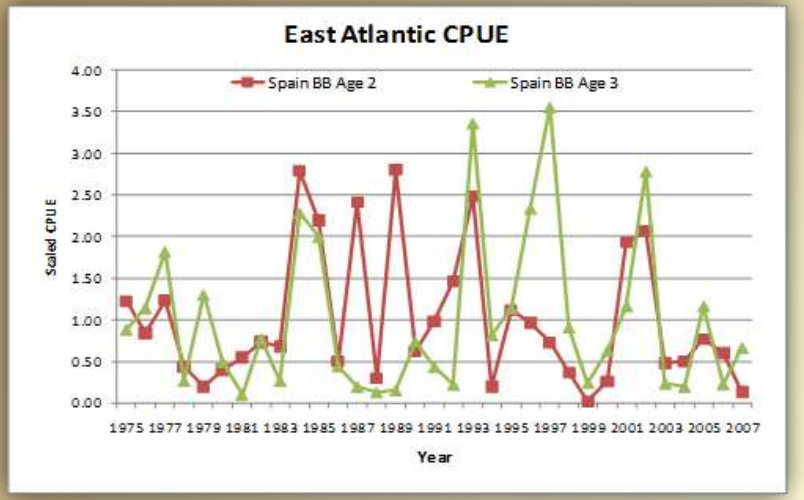
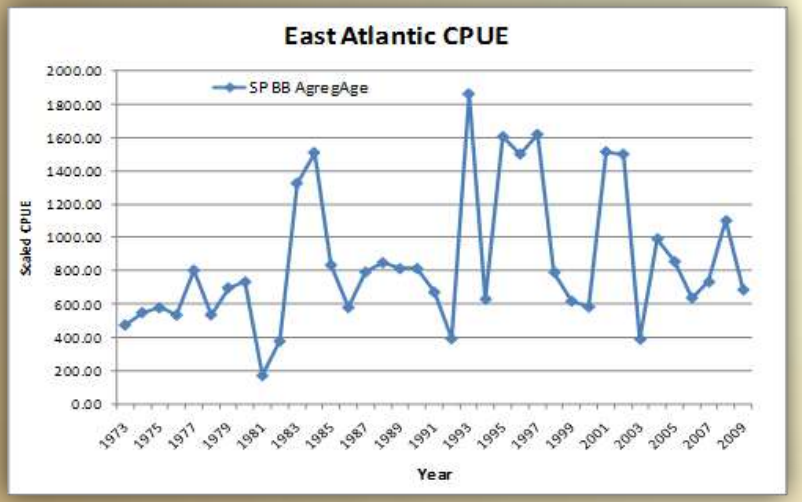
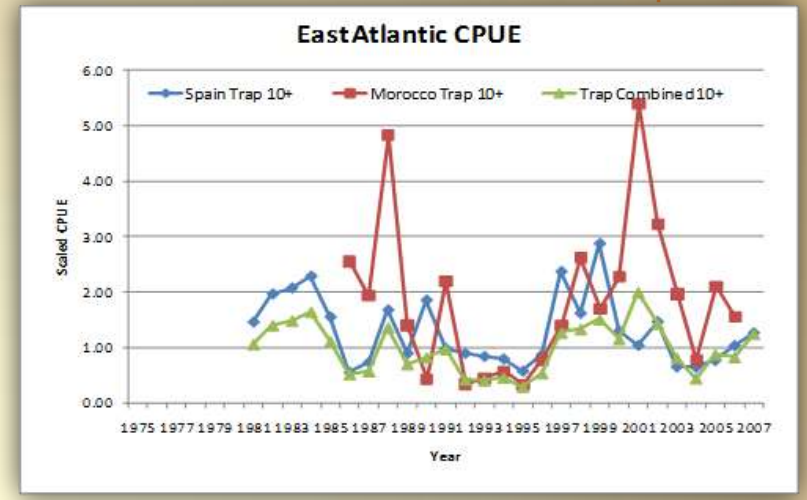
CPUE series

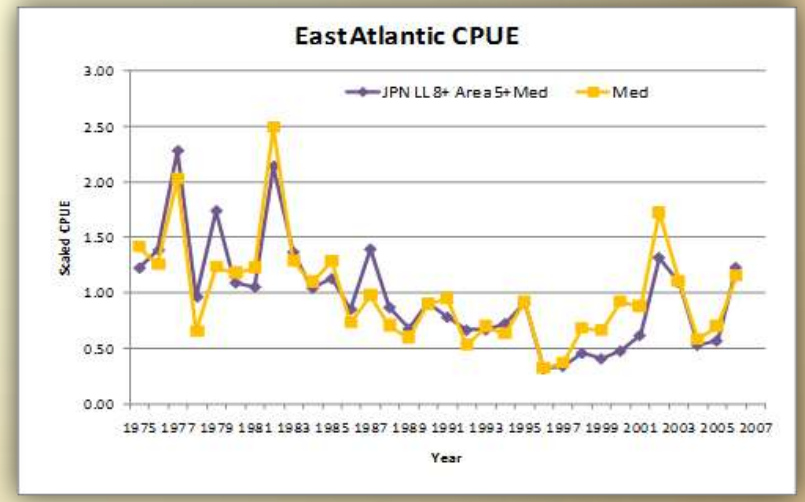
Juveniles





Spawners

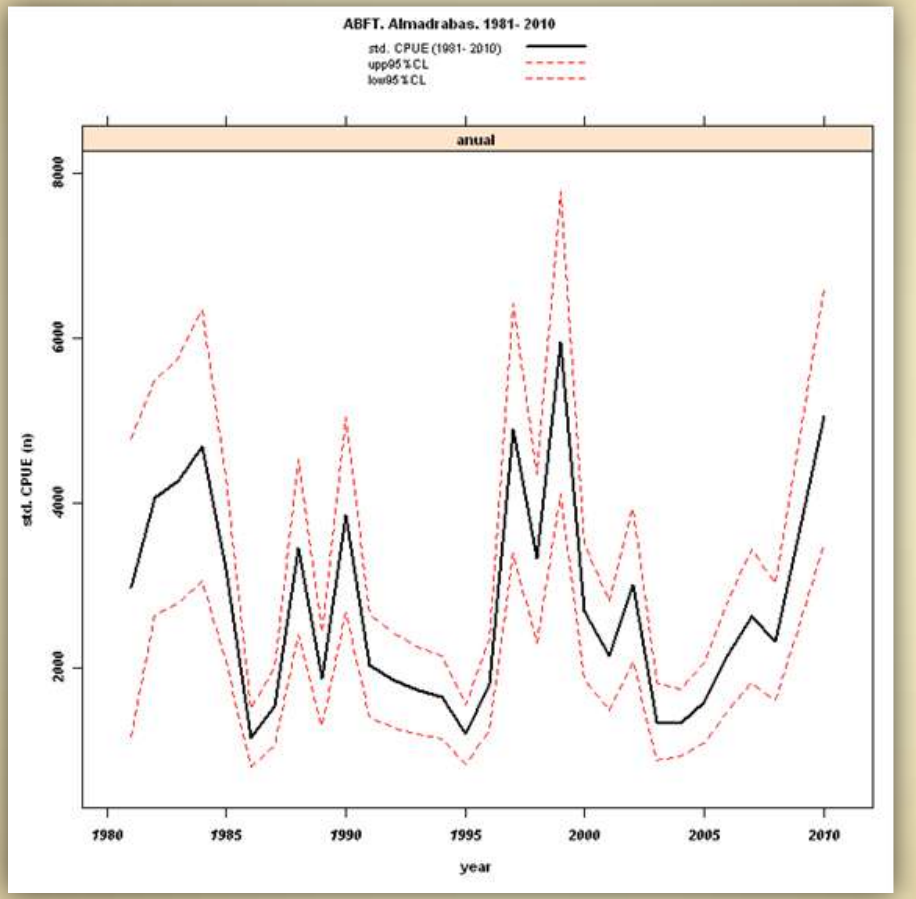




- High year-to-year variability, but **possible increase in recent years**
- Difficult to derive any clear conclusion in the absence of more precise information from the Mediterranean fisheries (cf aerial surveys)

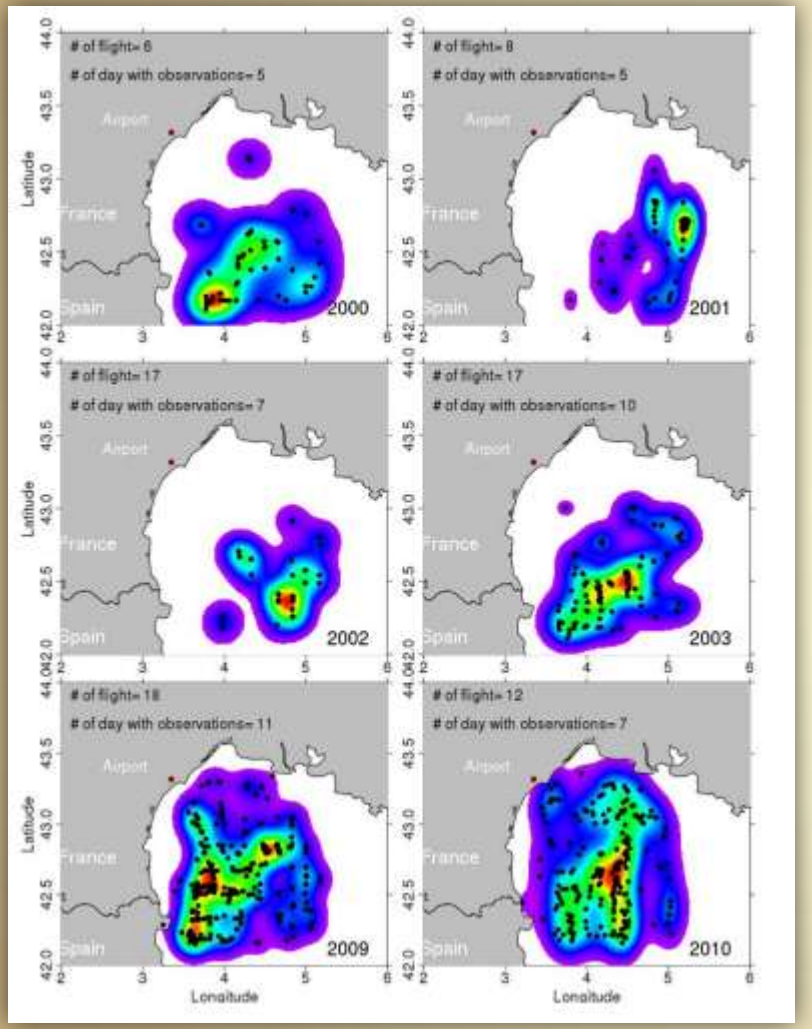
CPUE series

Updated Spanish Trap Index (SCRS/2011/153)

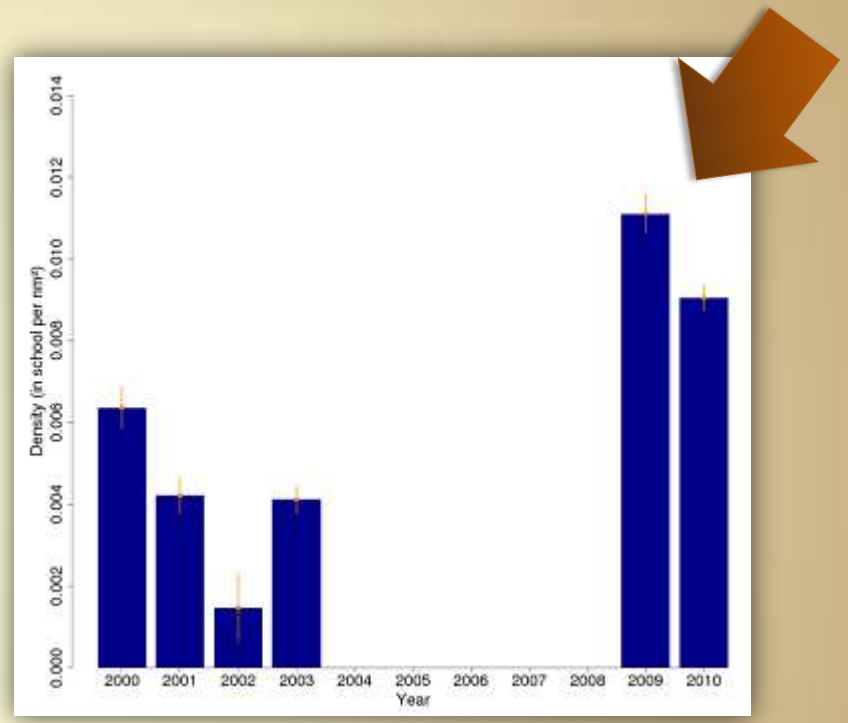


Índice de abundancia relativa estandarizado y correspondientes intervalos de confianza del 95% (basado en aproximación normal). ABFT, captura anual en número de individuos. Almadrabas españolas. 1981- 2010.

Other indicators (IFREMER aerial survey on juveniles in the Gulf of Lion)

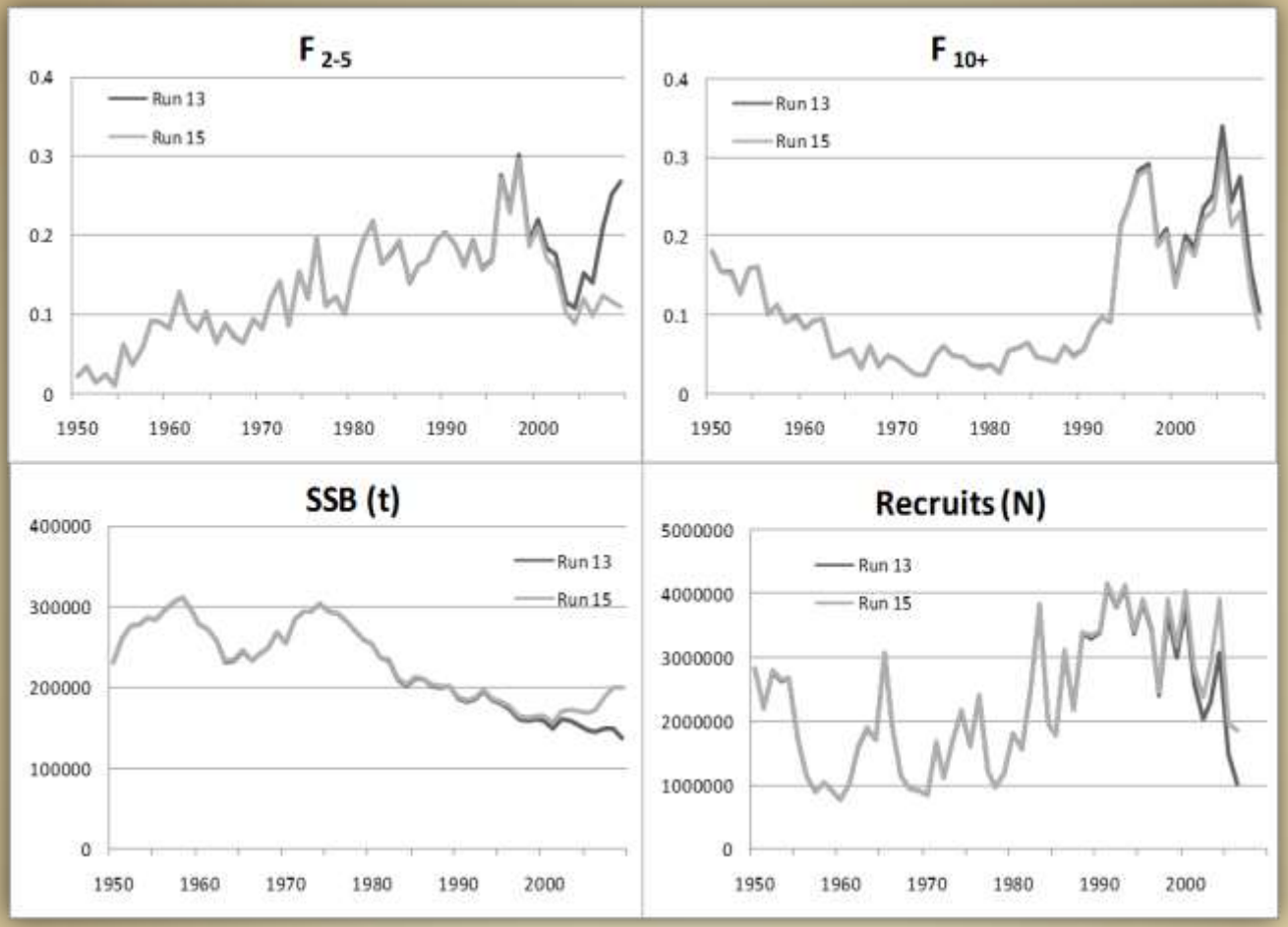


Résultats cartographiés des campagnes de suivis aériens depuis 2000



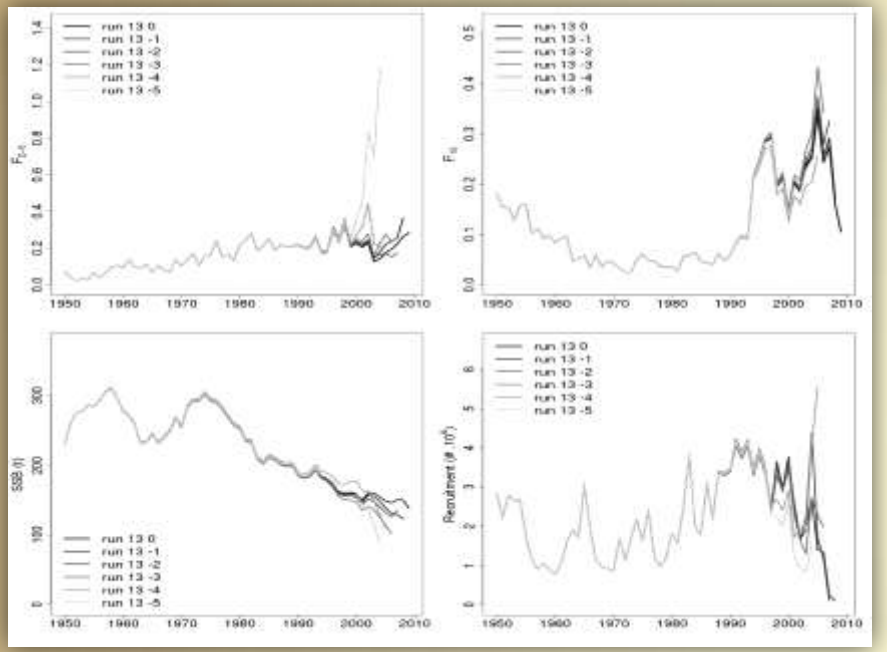
Evolution des densités de bancs de thons rouges dans le golfe du Lion de 2000 à 2010

Suivis aériens des juvéniles de thon rouge dans le Golfe du Lion (IFREMER)

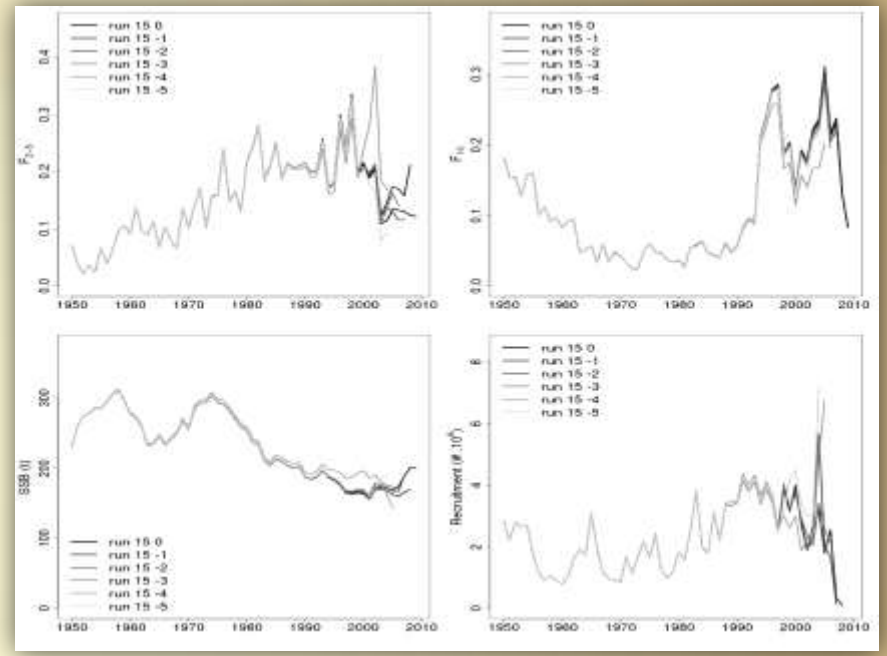


- **Recent SSB tendency** has shown signs of increase/stabilization in some runs while it continues to decline for others
- F_{10+} strongly **decreased** in recent years
- F_{2-5} **more uncertain** and higher variability

Retrospective patterns: Run 13



Retrospective patterns: Run 15



- Recent **recruitment levels remain very uncertain** (lack of information about incoming year class strength, low recent catches of fish < 30 kg and uncertainties in BB CPUE)
- The absolute values estimated for F and SSB are **sensitive to the technical assumptions** and could lead to a different perception in the whole trend in SSB

Other quantitative approaches

The statistical catch analysis (ASAP):

- Applied on same information as VPA: CAA 1970-2009, same CPUE indices
- Fit to CPUE indices reasonable ; stock trend similar but absolute values different than the VPA

Bayesian biomass dynamics model:

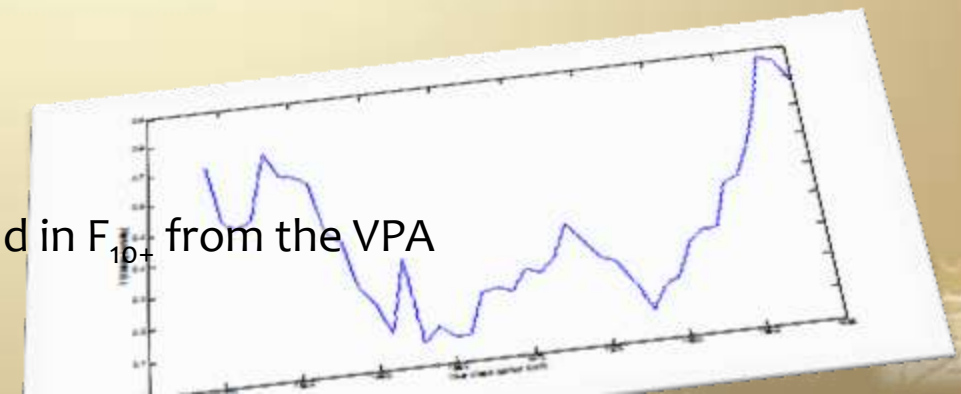
- Applied on Spanish trap and Japanese LL CPUE indices, using informative priors
- Problem of inconsistency between CPUE indices and catch leading to unreasonably high values of 'r'

The Catch Survey Analysis (CSA):

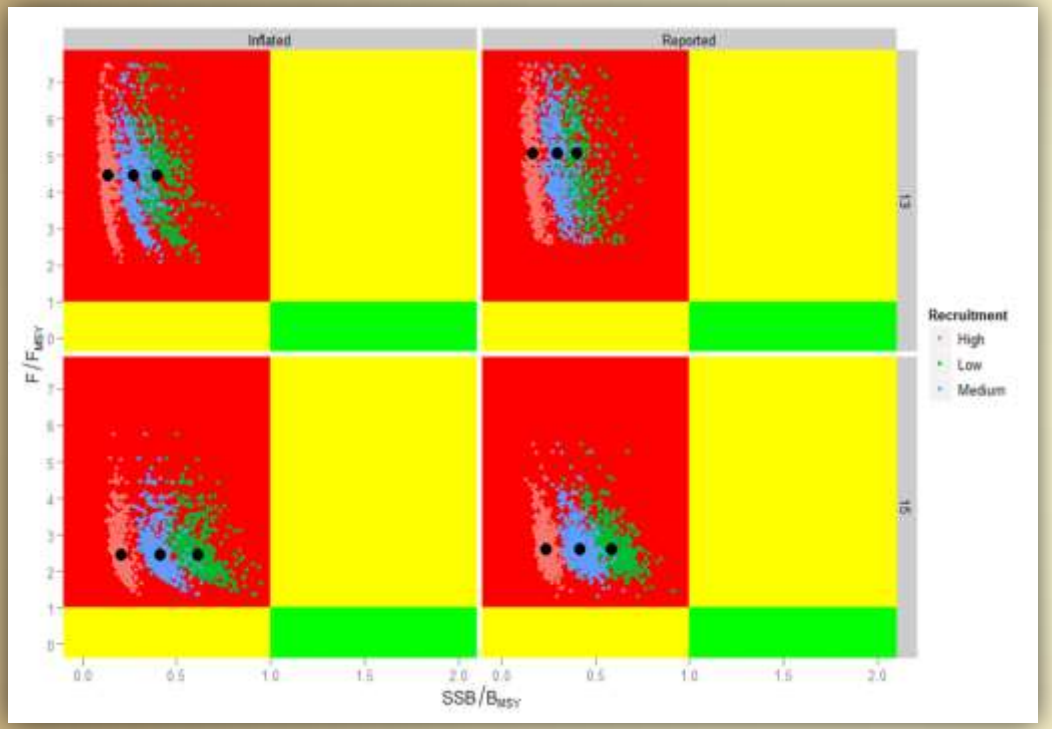
- Applied on Spanish BB indices (Age 2 for pre-recruits and 3, 4 and 5+ for post-recruits)
- Unlikely to be useful until reliable indices of abundance for the whole stock be available

The Year-class-curve analysis

- Applied on Spanish trap PCAA
- Confirm the general U-shaped trend in F_{10+} from the VPA



Assessment Summary

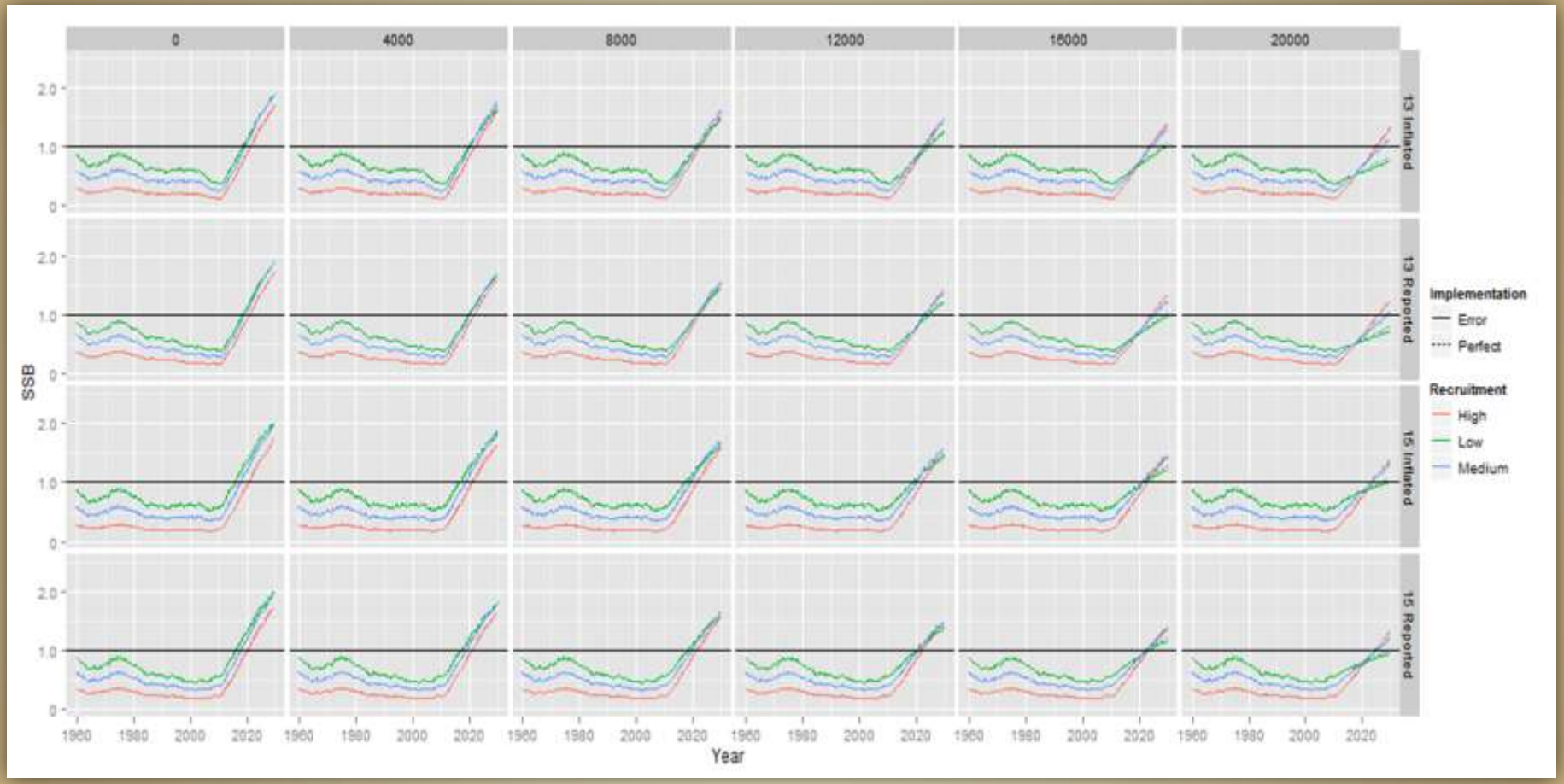


While there remain **considerable unquantified uncertainties,** it appears that:

- BFTE stock status has **improved** since the last assessment, but has a way to go before being considered consistent with Convention Objectives

- **Needs confirmation** by more intensive research and future analyses such as anticipated by the **GBYP**

Outlook



Good News: The stock is projected to increase over the projection period in all cases

Outlook

However:

- **Fewer achieve the Rebuilding Plan Objective within the Commission's rebuilding time frame:** the probability of success depends on many factors, but higher catch results in higher risk of failure

- Projections are subject to **high uncertainties, not all of which are quantified:** incorporation of additional uncertaintie into the analysis could change estimates of rebuilding probability

Outlook

Rebuilding Plan -> Rec[06.05 - 08.05 - 09.06]

Probability of success if TACs are adhered to, considering quantified uncertainties

Rebuilding of BFTE to SSBMSY proxy level with a probability of at least 60% could be achieved by:

TAC	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
0	0%	0%	0%	2%	6%	14%	25%	38%	52%	69%	89%	98%	99%
2000	0%	0%	0%	1%	5%	12%	21%	33%	46%	62%	83%	97%	99%
4000	0%	0%	0%	1%	4%	9%	18%	28%	40%	55%	75%	93%	99%
6000	0%	0%	0%	1%	3%	7%	14%	23%	34%	47%	66%	86%	97%
8000	0%	0%	0%	0%	2%	6%	11%	19%	29%	40%	56%	77%	92%
10000	0%	0%	0%	0%	2%	4%	9%	15%	23%	33%	46%	65%	84%
12000	0%	0%	0%	0%	1%	3%	6%	11%	18%	26%	37%	53%	73%
13500	0%	0%	0%	0%	1%	2%	5%	9%	14%	21%	30%	45%	63%
14000	0%	0%	0%	0%	1%	2%	4%	8%	13%	20%	28%	42%	59%
16000	0%	0%	0%	0%	0%	1%	3%	6%	9%	14%	20%	31%	46%
18000	0%	0%	0%	0%	0%	1%	2%	4%	6%	10%	15%	22%	34%
20000	0%	0%	0%	0%	0%	0%	1%	2%	4%	6%	10%	15%	24%

- Mid 2019 with a TAC = 0 t
- Mid 2022 with current TAC (13,500 t)
- Mid 2023 or later with a TAC >14,000 t

Effects of current regulations

- Substantial **decrease in the catch** occurred in the Eastern Atlantic and Mediterranean Sea through implementation of the rebuilding plan and through monitoring and enforcement controls.
- Concerns about substantial **excess capacity**.
- Important **changes in selectivity patterns** over the last three years (minimum size regulations, catch limits).
- Additionally, higher abundance or higher concentration of small bluefin tuna in the northwestern Mediterranean detected from aerial surveys could also reflect **positive outcomes from increase minimum size regulation**.
- While several fishery indicators have shown some positive tendency in the most recent fishing seasons, the available catch effort statistics are **not yet sufficient to permit the Committee to quantify the extent of impact of the recent regulations** on the overall stock with precision.

Management recommendations

- Implementation of recent regulations [Rec. 09-06, and previous recommendations] has clearly resulted in reductions in catch and fishing mortality rates.

- Because the fishery is currently adapting to these new management measures, the Committee is unable to fully understand the implications of the measures on the stock.

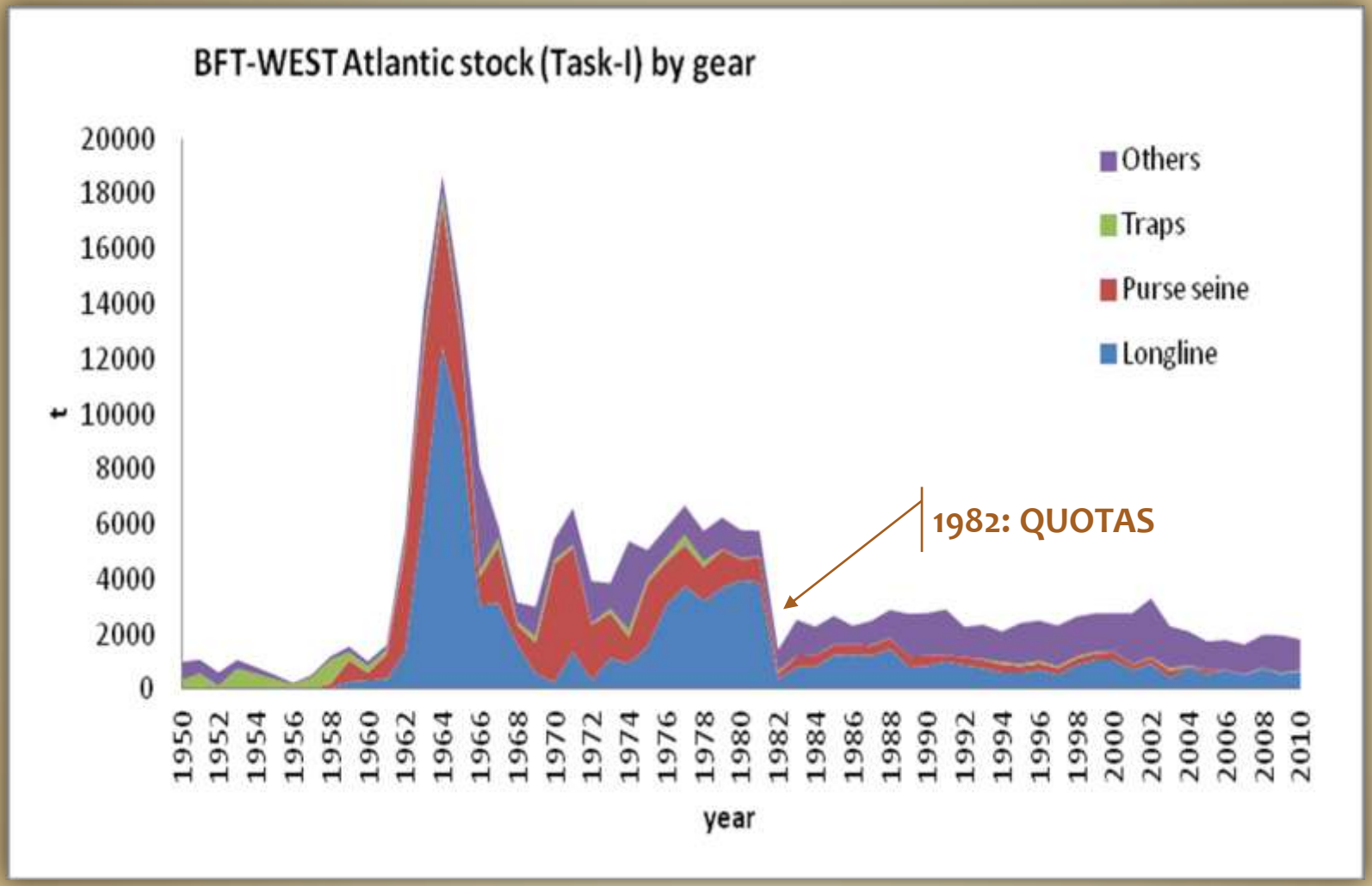
- The Commission might consider a probability of rebuilding standard different from that envisaged in [Rec. 09-06] considering the unquantified uncertainties.

- However, the Committee notes that maintaining catches at the **current TAC (13,500 t) or less** under the current management scheme, for 2011-2013, will likely allow the stock to increase during that period and is **consistent with the goal of achieving F_{MSY} and B_{MSY} through 2022 with at least 60% of probability**, given the quantified uncertainties.

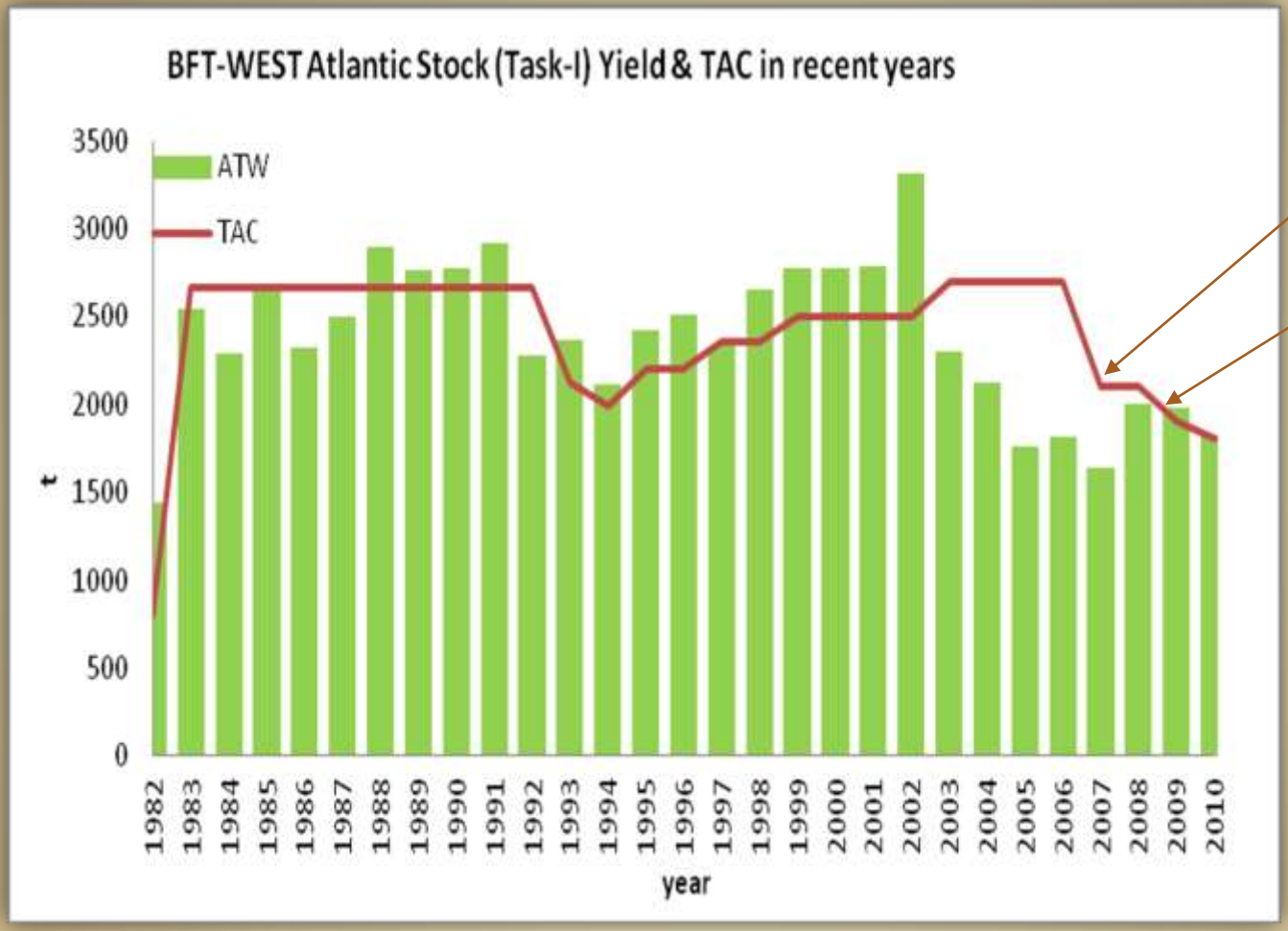
Western Bluefin Tuna

Last assessment: 2010

Fishery indicators



Fishery indicators

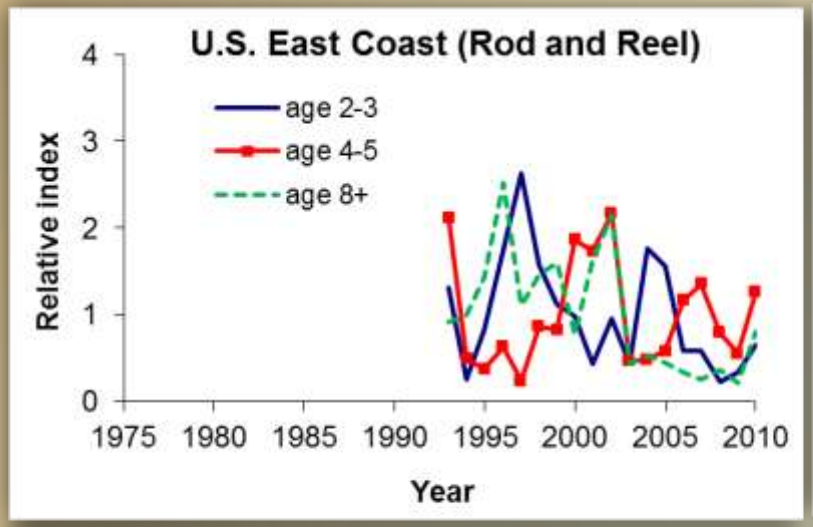


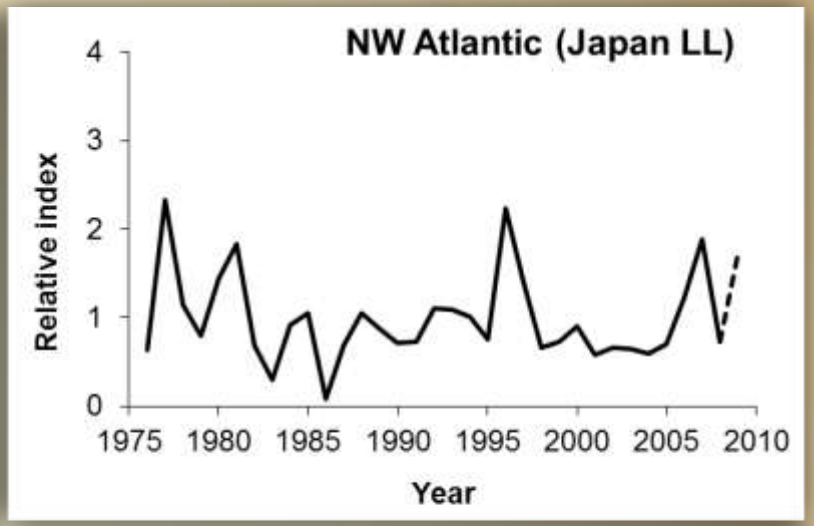
Rec. 06-06

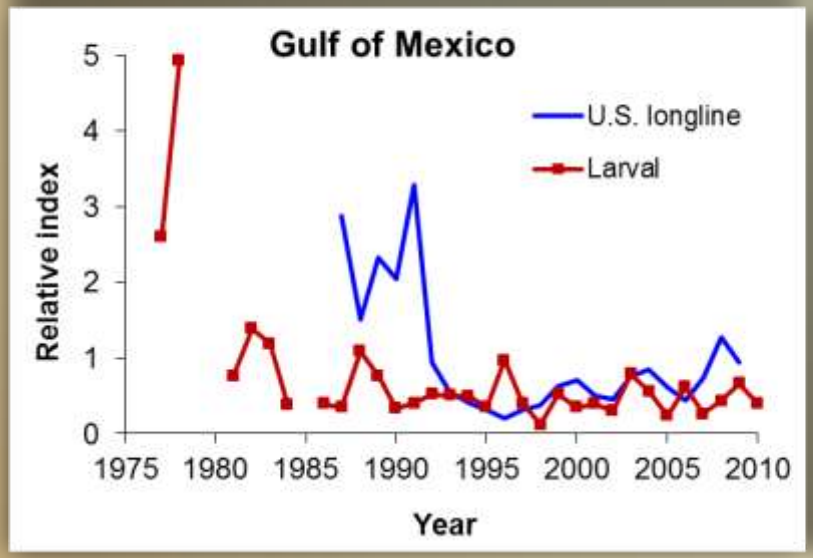
Rec. 08-04

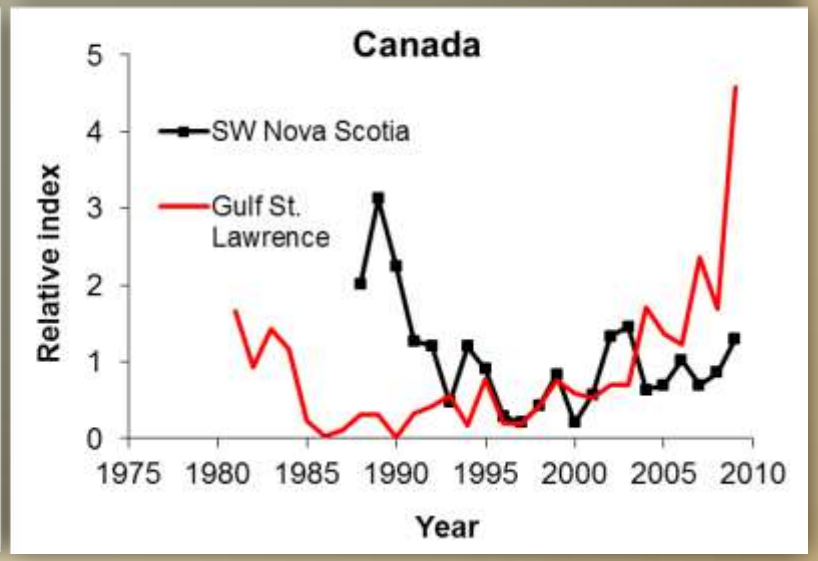
Rec. 10-03 (2011)

Fishery indicators

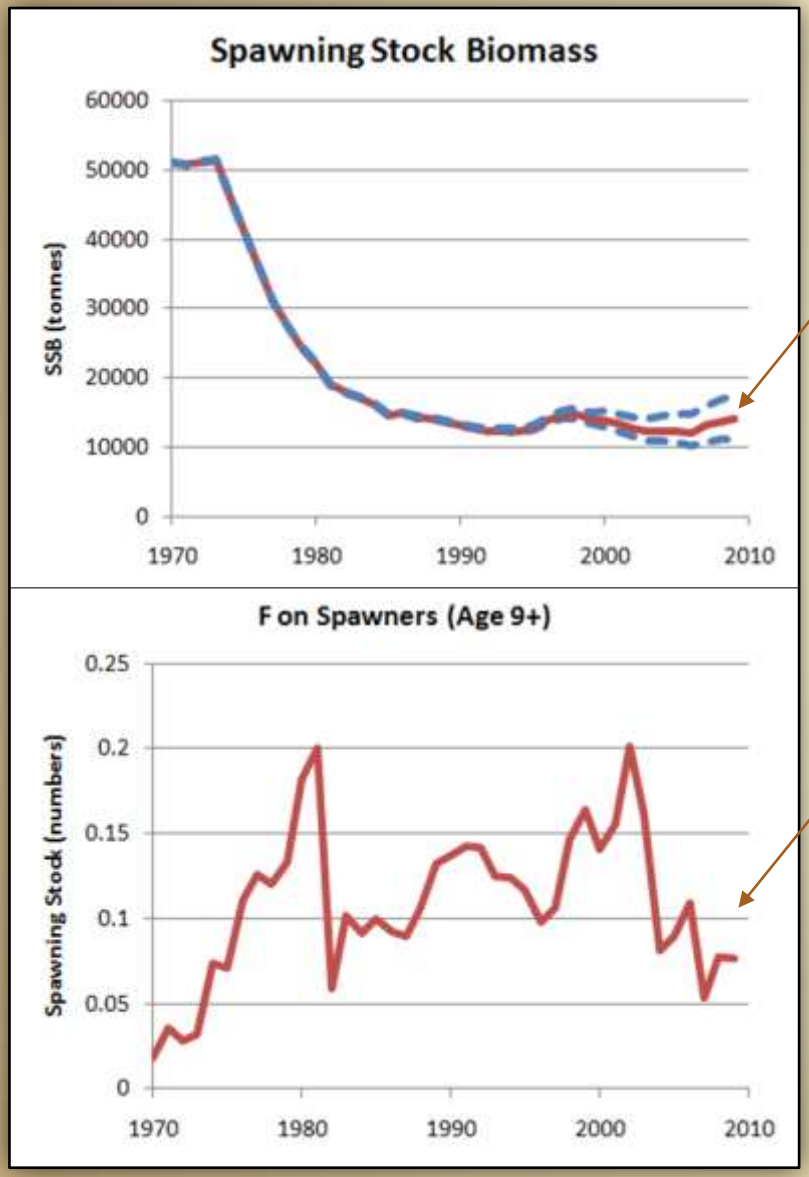








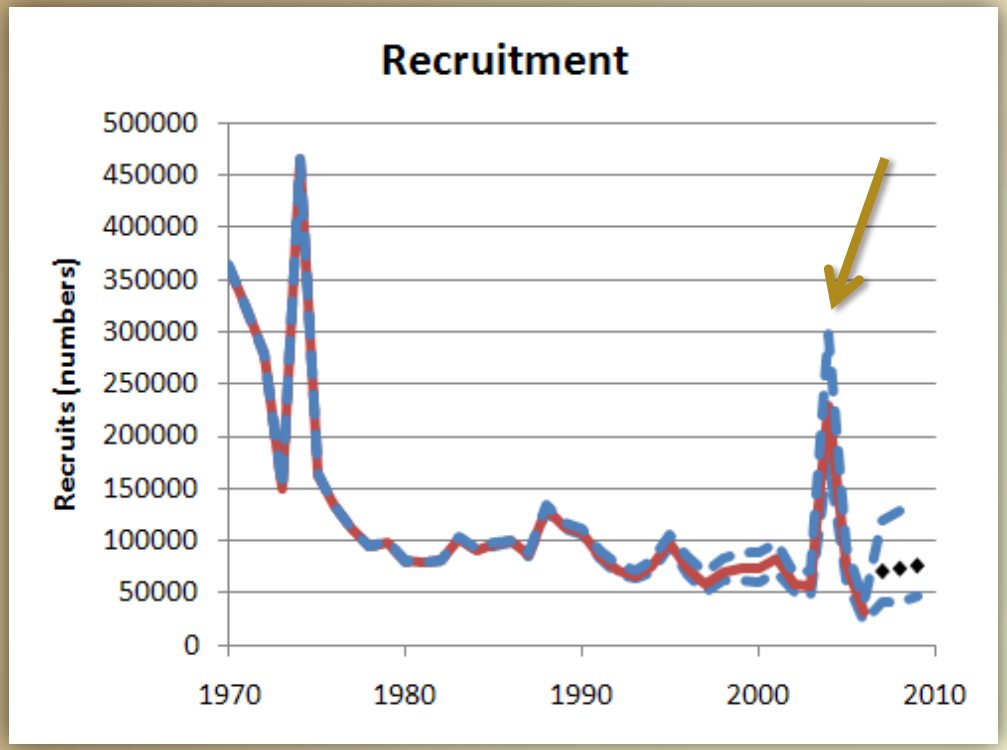
Stock status

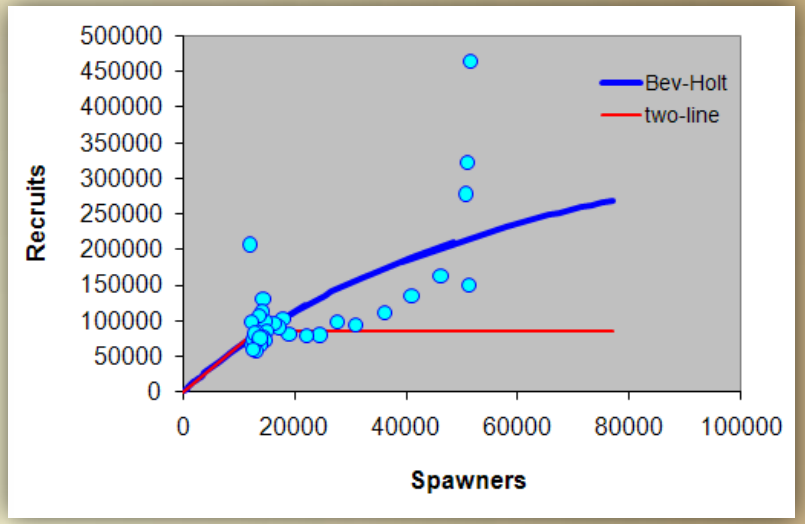


SSB: Spawning stock biomass estimates suggest **slow progress towards rebuilding** (2007 SSB was less than in 1998)

F: Estimates of fishing mortality on spawners show **decrease in recent years**

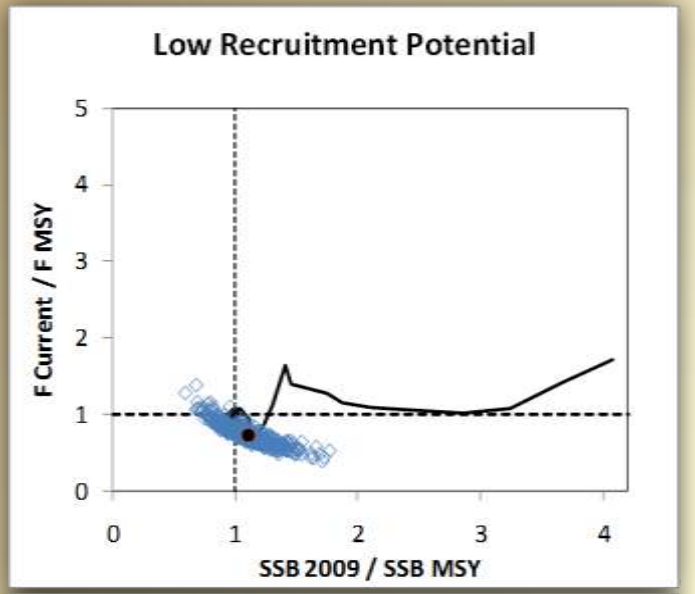
Stock status

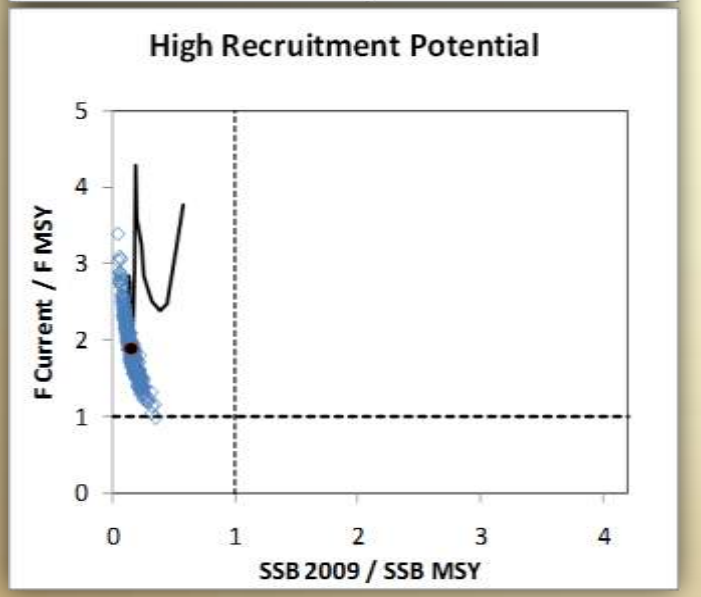




"The Committee has **no strong evidence to favor either scenario** over the other and notes that both are reasonable (but not extreme) lower and upper bounds on rebuilding potential."

Stock status

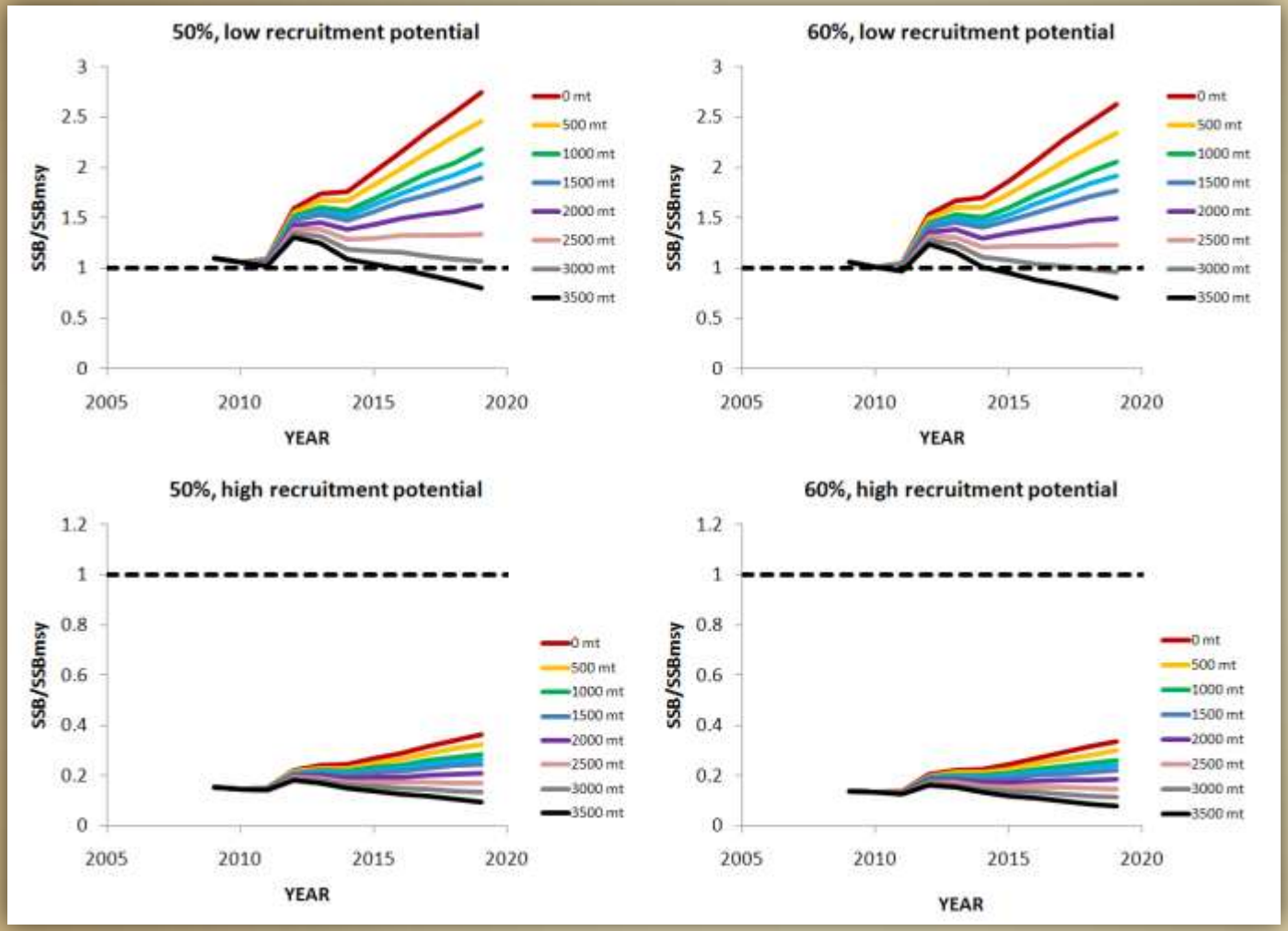




LOW: F/F_{MSY}=0.7, B/B_{MSY}=1.1

HIGH: F/F_{MSY}=1.9, B/B_{MSY}=0.15

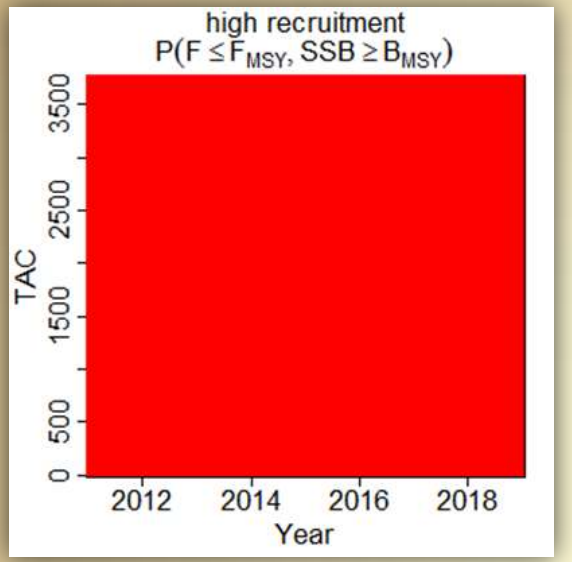
Outlook

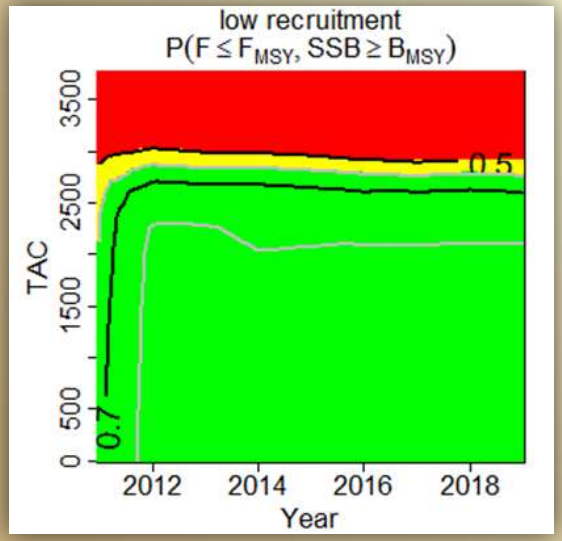


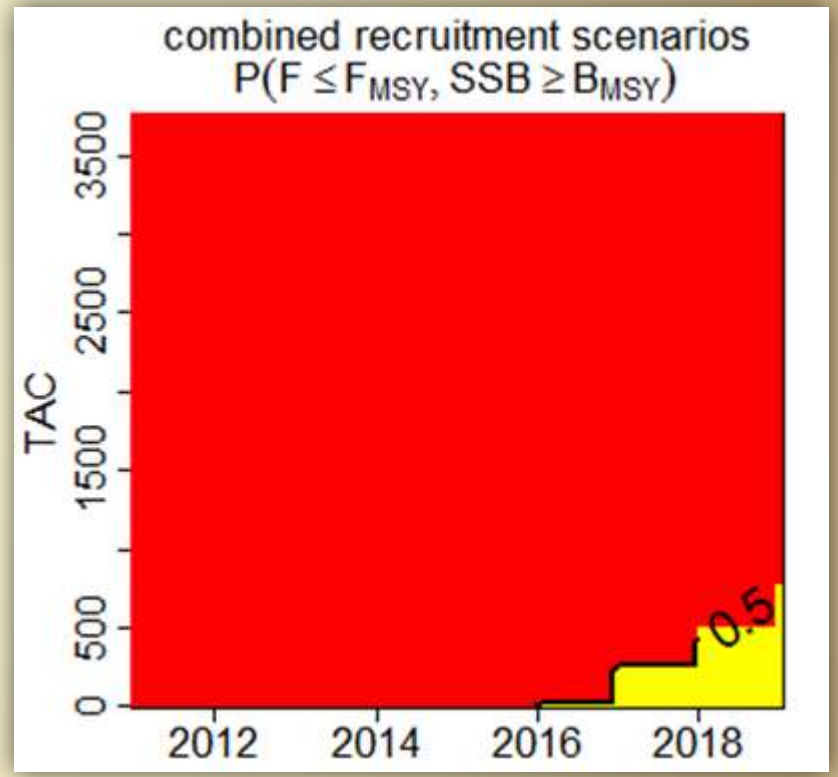
LOW recruitment potential

HIGH recruitment potential

Outlook


high recruitment
P(F ≤ F_MSY, SSB ≥ B_MSY)
TAC
0
500
1500
2500
3500
2012
2014
2016
2018
Year


low recruitment
P(F ≤ F_MSY, SSB ≥ B_MSY)
TAC
0
500
1500
2500
3500
0.5
0.7
2012
2014
2016
2018
Year


combined recruitment scenarios
P(F ≤ F_MSY, SSB ≥ B_MSY)
TAC
0
500
1500
2500
3500
0.5
2012
2014
2016
2018

Effects of current regulations

- There has not yet been enough time to detect with confidence the population response to measures 06-06 (implemented in 2007), 08-04 (2009), or 10-03 (2011).
- The 2010 assessment suggested the **spawning biomass** of western bluefin tuna might **be slowly rebuilding**.
- Updated fishery indicators "**continue to suggest … rebuilding**"

Management recommendations

- First time that the **strong 2003 year-class** has been clearly demonstrated; more observations required to confirm.
- **Subsequent year-classes**, although less well estimated, are the **lowest** observed values in the time series.
- The Commission may wish to **protect the 2003 year class** until it reaches maturity and contributes to spawning .
- Low recruitment scenario suggests that biomass is currently sufficient to produce MSY, whereas the "high recruitment scenario" suggests that B_{MSY} has a very low probability of being achieved within the rebuilding period.
- **Rec. 10-03 will allow the biomass to continue to increase.**

Management recommendations

- **Productivity of WBFT and western fisheries are linked to the EBFT stock.**
- **Management actions** taken in the eastern management zone are likely to influence **rebuilding of WBFT**
- **Small rates of mixing** from East to West can have **significant effects** on the West because the Eastern resource is much larger than that of the West.

Atlantic-wide Research Program for Bluefin Tuna (GBYP)

ACTIVITY REPORT FOR 2011 (PHASE 2)

http://www.iccat.int/GBYP/en

Background

- In **2008**, the Commission was advised that a comprehensive and well coordinated Atlantic-wide BFT research program, with an expected cost of ~ **€19 m** and **six year** duration, was required to:
    - Improve basic data collection
    - Improve understanding of key biological and ecological processes and,
    - Improve assessment models and provision of scientific advice
- The ICCAT-GBYP was started on March **2010**.
- A GBYP Coordinator is responsible for the Program at the ICCAT Secretariat since March 2010; a coordinator assistant was hired in March 2011.

Background

GBYP-2010
Phase 1

- Aerial survey
- Data recovery
- Tagging design

GBYP Budget in Phase 1 (2009-2010)	
Allocation	**Amount (€)**
Coordination	210.000,00
Data mining, data recovery and data elaboration	200.000,00
Aerial survey	300.000,00
Conventional tagging design	40.000,00
Total	**750.000,00**

GBYP Phase 1 (2009-2010)	
Contributors	**Amount (€)**
ICCAT CPCs:	
European Union	600.000,00
United States of America	71.200,00
Turkey	22.500,00
Norway	20.000,00
Canada	15.000,00
Japan	10.000,00
Croatia	7.000,00
1st total	**745.700,00**
Chinese Taipei	3.000,00
ICCAT Secretariat	1.300,00
Total	**750.000,00**

Background

GBYP-2011
Phase 2

- Aerial survey
- Data recovery
- Biological sampling
- Tagging
- Modeling

GBYP reduced Budget in Phase 2 (2010-2011)

Allocation	Amount (€)
Coordination	453.000,00
Data mining, data recovery,data elaboration and Trap Symposium	149.000,00
Aerial survey (+ updating design,Workshop and training course)	465.000,00
Tagging (+tag recovery and rewards)	890.000,00
Biological and genetic sampling (including analysis)	505.000,00
Modelling	40.000,00
Total	**2.502.000,00**

GBYP Phase 2 (2010-2011)

Contributors	Amount (€)
ICCAT CPCs:	
European Union	2.000.000,00
United States of America	177.700,07
Turkey	75.060,00
Libya	50.000,00
Japan	42.398,00
Morocco	30.000,00
Canada	22.000,00
Norway	20.000,00
Croatia	10.000,00
1st total	**2.427.158,07**
Chinese Taipei	3.000,00
ICCAT Secretariat	82.841,93
Total	**2.529.000,00**

other private entities:
APCCR, Balfegó, Ricardo Fuentes, El Sahel , IEO, INRH, Maromadraba, R. Mielgo , W.W.F.

Aerial survey

Aerial surveys targeting spawning aggregations can potentially provide trends and indices for the spawning stock biomass. Surveys shall be conducted with a statistically sound design and for several years in order to get reliable indices.

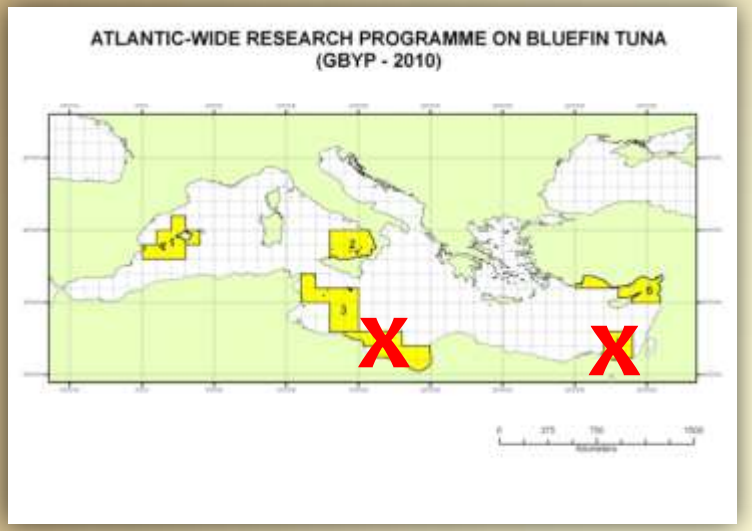
Phase 1:

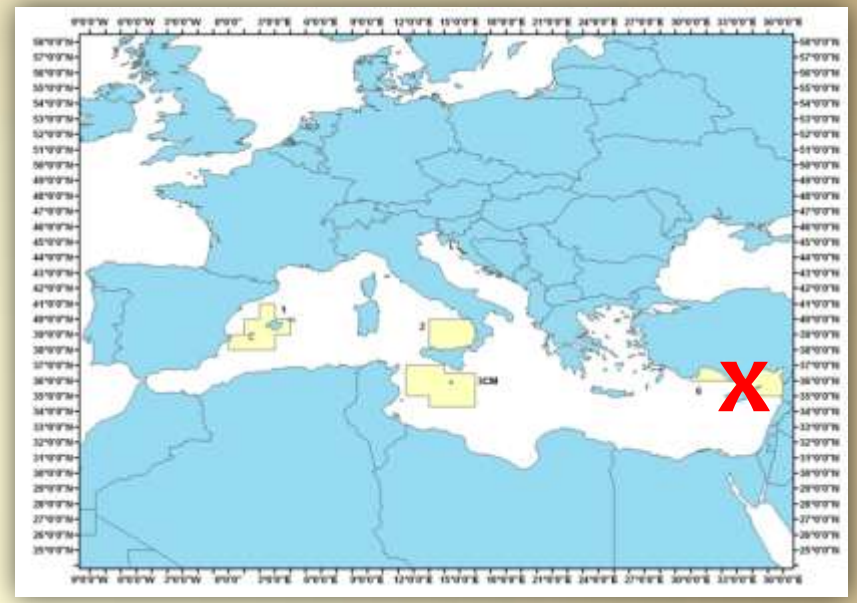
- Definition of spawning areas: **6 relevant areas**
- 1st aerial survey (May-August): **4 areas**
- Elaboration on aerial survey data, and definition of scenarios for the Phase 2 survey.

Phase 2:

- Workshop on Aerial Survey (February 14-16, 2011).
- Elaboration of the design (March 2011)
- Training course for pilots, professional and scientific observers (May 17-18, 2011).
- 2nd aerial survey (May-July): **3 areas**
- Elaboration on aerial survey data, and definition of scenarios for a comprehensive Mediterranean survey in Phase 3

Aerial survey





- 4 areas were selected (geo-political situation), with a slight modification of the 2010 areas, limited to Area 3CM.
- Only 58% of the projected area was sampled (215,000 km^2).
- Problems of permits: Syria, Turkey, area South of Malta.
- It was disappointing the fact that survey was not conducted in the Eastern Mediterranean, preventing a full comparative analysis with 2010 data.

Aerial survey

Year	2010			2011		
Sub-area	**1**	**2**	**3 (left truncation)**	**1**	**2**	**3M (left truncation)**
Survey area (km²)	62,264	52,461	90,796	62,264	52,461	100,471
Number of transects	52	45	42	131	77	65
Transect length (km)	6,301	8,703	5,288	7,977	8,771	11,429
Effective strip width x2 (km)	9.66	2.92	9.66	7.03	7.03	0.66
Number of schools	7	6	19	11	10	35
Encounter rate of schools	0.0011	0.0007	0.0036	0.0014	0.0011	0.0031
%CV encounter rate	51	43	39	32	31	24
Density of schools (1000 km^{-2})	0.157	0.237	0.508	0.196	0.162	3.980
%CV density of schools	55	53	44	37	36	26
Mean weight (t)	127.1	124.2	50.6	84.8	42.7	102.8
%CV weight	8.0	5.6	25	26	44	27
Total weight (t)	**1,244**	**1,540**	**2,335**	**1,033**	**364**	**44,837**
%CV total weight	56	53	51	43	54	41

The data are **very preliminary** and provisional, because the analysis needs some refinements; the **high inter-annual variability** by area and time is very evident.

Aerial survey

- The SCRS recommends the **extension of the survey area** in 2012 and forward as the only way to obtain reliable independent indices of spawners from aerial surveys to be used for monitoring the stock. This extension will imply additional costs on the order of **1,2 - 2,5 million Euros per year** for more than one year (**up to and including 2022 considering CV=0,4**)

- Without the adequate **financial support** and the **guarantee of flight permits** these surveys would not secure obtaining reliable results.

- In addition to the budgetary implication, any type of survey has serious scientific problems if the coverage will not include **all the areas** where the BFT spawning activity is usually occurring with the highest intensity, e.g., the far eastern Mediterranean Sea. **If the new budget proposed or the permits to operate in these areas are not guaranteed, then the survey should be suspended**. At the same time, the commitment for the aerial survey should be for a **number of years sufficient** to provide a reliable trend.

Data recovery

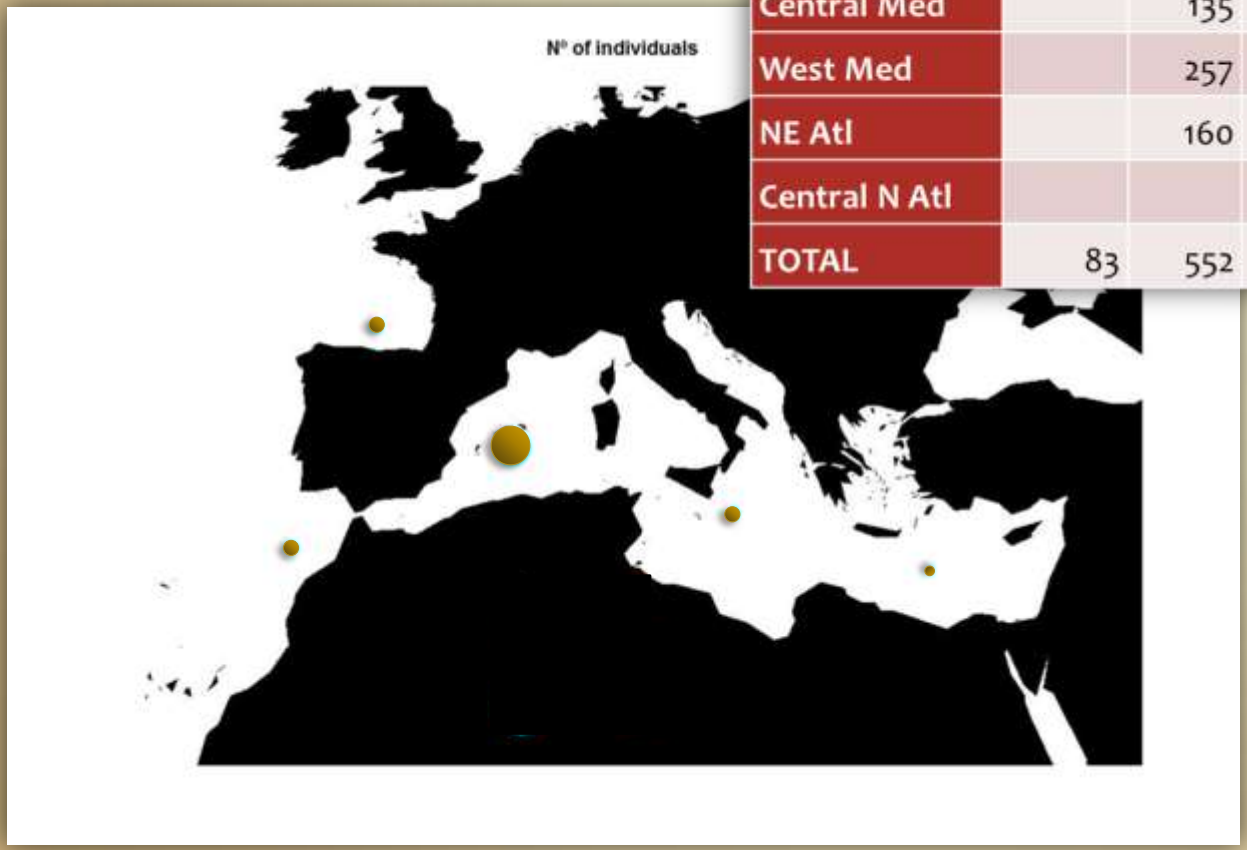
- 2010: Three calls (five bids were awarded): more than 400,000 new data.

- 2011: Two calls (six bids were awarded):
  - more than 18,500,000 trap data already arrived to the ICCAT data base before SCRS 2011 after the first round.
  - New sets for more than 6,848,000 additional trap data and 38,078 data from other fisheries have been recently provided by the second round.
  - Trap data now include records from the XVI century.

Biological sampling

- The biological and genetic sampling and analyses was awarded to a Consortium of **13 Institutes** from **8 Countries**

	Larvae	Otolith	Spine	Gonad	Muscle/Fin	TOTAL
East Med	83					83
Central Med		135	50	10	151	346
West Med		257	249	176	429	1111
NE Atl		160	32		276	468
Central N Atl						0
TOTAL	83	552	331	186	856	2008



Tagging

Tagging experiments can provide **direct estimates of fishing mortality, natural mortality, mixing and/or abundance** for incorporation into the stock assessments.

Phase 1:

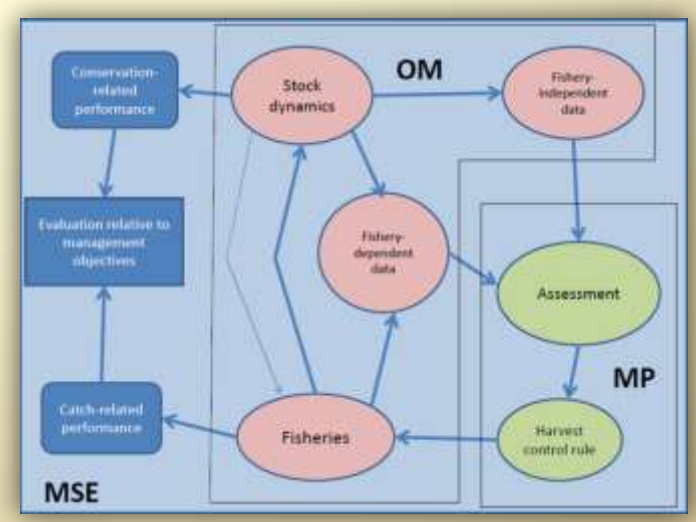
- Elaboration of the tagging design.

Phase 2:

- Approval of the tagging design (February 2011).
- More than 1950 tunas have been tagged (65% double tagging). The GBYP 2011 tagging activity will be completed before the end of the year.

Modeling

- Risk analysis to identify the **main perceived sources of uncertainty** related to assessment and advice,
- Develop **new assessment and advice** based on various data sets being collected and the new knowledge being gained under the GBYP.
- Additional work is being developed by a team of SCRS scientists together the ICCAT Secretariat.



GBYP Phase 3

GBYP Beyond Year 1?						
		All Priorities (000 €)				
Contracting Party	Cost Share	Year 2	Year 3	Year 4	Year 5	Year 6
Communauté Européenne	80.0%	€ 4,676	€ 4,676	€ 4,156	€ 712	€ 488
Japan	5.2%	€ 306	€ 306	€ 272	€ 47	€ 32
United States	4.0%	€ 233	€ 233	€ 207	€ 35	€ 24
Turkey	3.7%	€ 218	€ 218	€ 194	€ 33	€ 23
Maroc	3.5%	€ 204	€ 204	€ 181	€ 31	€ 21
Canada	1.8%	€ 105	€ 105	€ 94	€ 16	€ 11
Croatia	1.1%	€ 62	€ 62	€ 55	€ 9	€ 6
Norway	0.6%	€ 37	€ 37	€ 33	€ 6	€ 4
Chinese Taipaei	0.1%	€ 4	€ 4	€ 4	€ 1	€ 0
Others	?	?	?	?	?	?
Total		€ 5,845	€ 5,845	€ 5,195	€ 890	€ 610

2.502.000 €

There are **critical needs** for:

A stable system to ensure the **regular and adequate funding** of the GBYP which should be to avoid yearly incertitude.

All concerned CPCs need to provide the necessary support to the GBYP, in order to:

- support the ICCAT Secretariat initiatives, particularly for contacts with the national Authorities concerned;
- **guarantee of flight permits** concerning the GBYP activities in their territorial waters or airspace;

GBYP Phase 3

GBYP PHASE 3 (2011-2012)	
Allocation	*Amount (€)*
Coordination	463.980,00
Data mining, data recovery, data input and processing	133.000,00
Aerial survey (including updating design and the workshop)	1.370.000,00
Tagging (conventional, PATs, tag recovery campaign and reporting, rewards) and an operational meeting	1.776.000,00
Biological sampling (including hard parts, genetic sampling and analysis) and an operational meeting	540.000,00
Modelling trials and two workshops	135.000,00
Total	**4.417.980,00**

Responses to Commission's requests

- 18.3 Exploring operationally viable technologies and methodologies for determining the size and biomass at the points of capture and caging [Rec. 10-04]
- 18.4 Reporting on scientific aspects of national observer programs on the basis of the information provided by CPC [Rec. 10-04]

18.3 Exploring operationally viable technologies and methodologies for determining the size and biomass at the points of capture and caging [Rec. 10-04]

- [Rec. 10-04] requests the CPCs to initiate pilot studies on how to better estimate both the number and weight of bluefin tuna at the point of capture and caging including through the use of stereoscopic systems and report the results to the SCRS.
- 4 SCRS documents regarding the use of stereoscopic camera systems describing some work in progress on board of Mediterranean cages in 2011.

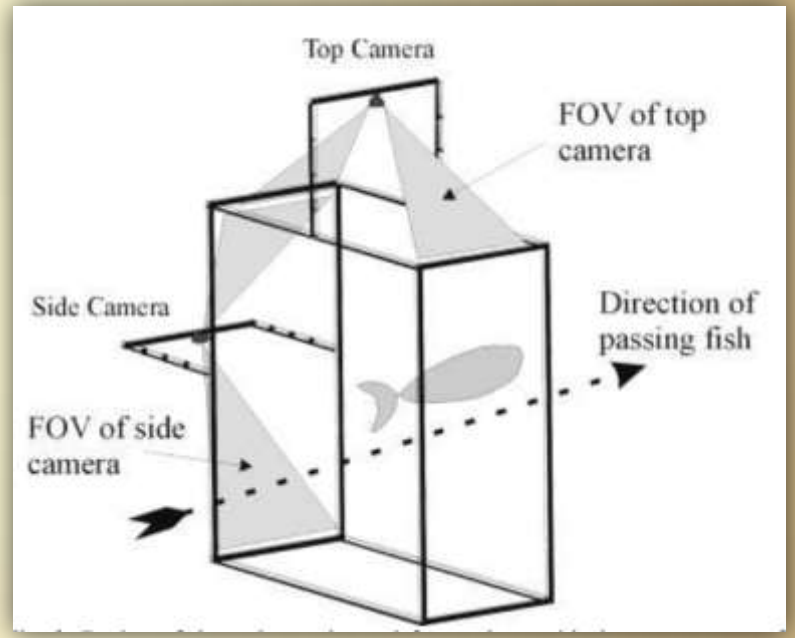
SCRS/2011/173	Pilot study of a dual camera system for the determination of size of bluefin tuna (*Thunnus thynnus thynnus*) during caging.	Ramfos, A., Alaveras, P., Tzoumas, A. and Katselis, G.
SCRS/2011/189	El sistema VICASS (Video Image Capturing and Sizing System) como medio para la medida de atunes de forma no invasiva.	Gándara, F.
SCRS/2011/190	Experimental setup for monitoring the growth of tuna in cages by the combined use of acoustic and optical cages.	Puig, V., Espinosa, V., Soliveres, E., Gandara, F, Ortega, A. and Belmonte, J
SCRS/2011/191	Malta's report on a Pilot study carried out in 2011 to estimate the number and weight of bluefin tuna at the point of capture and caging by stereoscopic camera.	Anon.

18.3 Exploring operationally viable technologies and methodologies for determining the size and biomass at the points of capture and caging [Rec. 10-04]

SCRS/2011/173

Pilot study of a dual camera system for the determination of size of Atlantic bluefin tuna (Thunnus thynnus, L. 1758) during caging.

- Pilot study on the cages of Bluefin Tuna Hellas company (Ionian Sea) in July 2011.
- The tested system:
  - An orthogonal metal frame (10x10m) positioned in the fattening cage through which the transferred fish will be forced to pass.
  - 2 videocamaras arranged perpendicularly on the side and top of the frame.
- Future development: a new frame of smaller size (8x8x3m or 7x7x3m) and constructed of a lighter material such as aluminum which will minimize the oscillation/deformation and poor light quality problem.



18.3 Exploring operationally viable technologies and methodologies for determining the size and biomass at the points of capture and caging [Rec. 10-04]

SCRS/2011/189

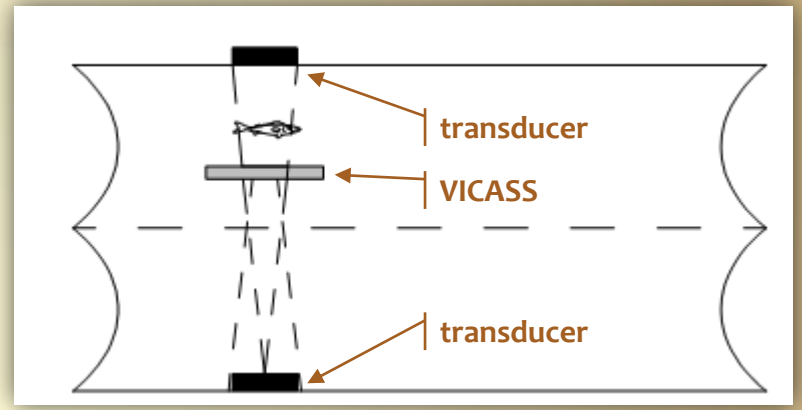
El sistema VICASS (Video Image Capturing and Sizing System) como medio para la medida de atunes de forma no invasiva.

- Utilizado en el proyecto SELFDOTT (Self sustained Aquaculture and domestication of BFT) en Cartagena (España).
- Sistema de análisis de imagen estereoscópica obtenida mediante 2 videocámaras digitales.
- Futuros desarrollos: uso combinado con ecosondas.

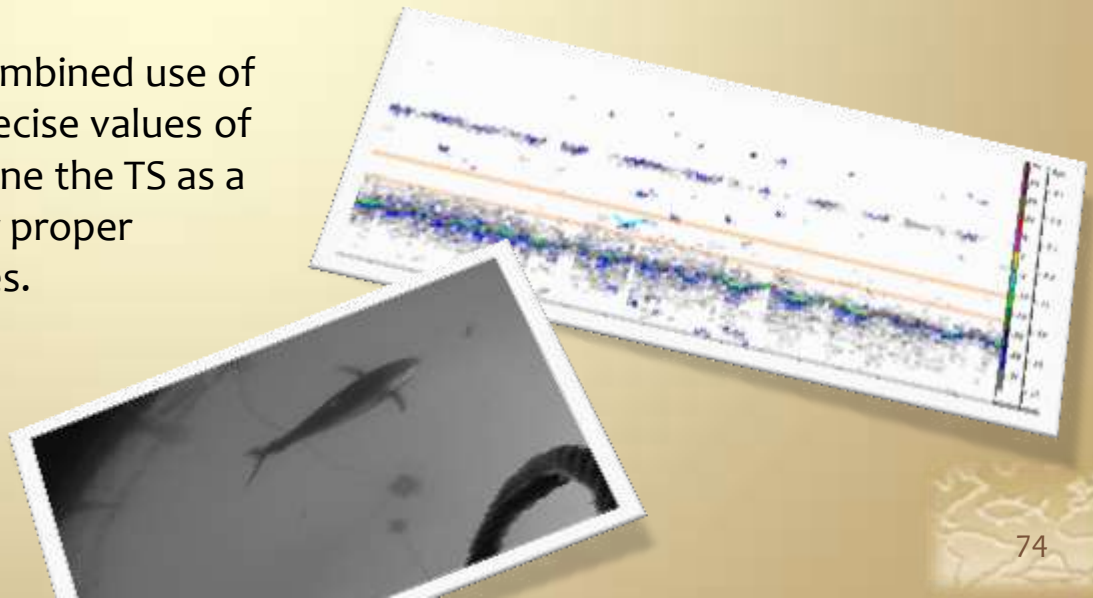
18.3 Exploring operationally viable technologies and methodologies for determining the size and biomass at the points of capture and caging [Rec. 10-04]

SCRS/2011/190

Experimental setup for monitoring the growth of tuna in cages by the combined use of acoustic and optical cages.



- EU SELFDOTT project in Cartagena (Spain).
- A combined system of acoustic and optical techniques.
- Preliminary results indicate that combined use of both techniques provides more precise values of the parameters needed to determine the TS as a function of fish orientation and for proper monitoring of tuna in floating cages.



18.3 Exploring operationally viable technologies and methodologies for determining the size and biomass at the points of capture and caging [Rec. 10-04]

SCRS/2011/191

Malta's report on a Pilot study carried out in 2011 to estimate the number and weight of BFT tuna at the point of capture and caging by stereoscopic camera.

- All BFT cage transfers to Maltese registered farms during the 2011 season were covered by the use of the stereo-camera system.
- Counting and measuring through the **6X4m steel gate** was **relatively easy**.
- Conventional net apertures of approximately 10X10m, **difficult or impossible**. (dimension of shoals, visibility, sea condition,…)
- Recommendations for improvement are given and should be tested.

6X4m steel gate

18.3 Exploring operationally viable technologies and methodologies for determining the size and biomass at the points of capture and caging [Rec. 10-04]

- The estimates of fork length remain incomplete because of a few **technical issues** that remain to be solved.
- However, the first results are **encouraging** and **confirm the potential of stereoscopic camera to recover the length composition** of the fish that are transferred alive into cages.
- The **SCRS** strongly encourages the CPCs to carry on and **complete these studies in 2012**, so that stereoscopic camera systems become operational as soon as possible.
- While the **cages** do not correspond to the exact points of captures, the information from cages may be, however, adequate to reconstruct the size composition of the catch if the **measurements are performed at the arrival of the towing vessel**.
- **Trials** with stereoscopic camera **on board of fishing vessel** have been also investigated in 2011, but the results of these operations were not provided to the SCRS.

18.4 Reporting on scientific aspects of national observer programs on the basis of the information provided by CPC [Rec. 10-04]

- Rec. 10-04 establishes obligations to CPCs to conduct national observer programs: PS <= 24 m in 2011 (20 m in 2012), pelagic trawlers (>15 m), LL (>15 m) and BB (>15 m), tuna traps and towing vessels.
- Main work of the observers: related to **compliance** activities but they could carry out **scientific work** (Task II data).
- The SCRS has been requested to report on the coverage level, data collected and any relevant findings associated with the data; and to provide any recommendations to improve the programs.
- **Few CPCs had provided information (**and insufficient degree of detail). The SCRS was aware that more CPCs had observer programs in place but details hadn't been made available to the Secretariat.
- **The SCRS didn't have enough elements to conduct a detailed analysis**.

18.4 Reporting on scientific aspects of national observer programs on the basis of the information provided by CPC [Rec. 10-04]

- The SCRS recommends that the CPCs **transmit as soon as possible** all scientific information of the 2011 national observer programs **to the national scientists.** If provided in due time, the national scientists could analyze this information and **transmit all relevant processed data to the ICCAT Secretariat,** according to the deadline of the 2012 bluefin tuna Work Plan.

P2 Research and Statistics

General recommendations to the Commission that have financial implications

1. **ALB Research Program for North Atlantic albacore.**

   - Duration: 4 years (2012-2015)
   - Budget: 4.3 million €

   - **Research objectives**:
     a) Improved knowledge of the population dynamics.
     b) Improved understanding of the interactions between the biological and ecological processes of the ALB stock and the fisheries.
     c) Reduced uncertainty in stock assessment.
     d) The provision of robust management strategies for the sustainable exploitation of the stock at MSY that take into account social and economic objectives.

General recommendations to the Commission that have financial implications

2. In relation to the Atlantic-wide Research Program for Bluefin Tuna (**GBYP**):

The SCRS recommends that the Commission and all CPCs concerned reaffirm their commitments to GBYP by:

- Developing a **funding schedule** by which CPCs may calculate their voluntary contributions;
- Ensuring **assistance for the permits** in their territorial waters or airspace;
- Providing the necessary **contacts at the national level;**
- Providing **official derogations to allow the sampling** of fish below the minimum size limit, the use of any type of fishing gear and the possibility of fishing even during the closed fishing season.
- Implementing a "**research mortality allowance**" up to **20 t** for incidental mortality of BFT tuna during GBYP conventional tagging and biological sampling programmes.

General recommendations to the Commission that have financial implications

2. In relation to the Atlantic-wide Research Program for Bluefin Tuna (**GBYP**):

The development of fisheries-independent surveys and original modeling approaches imply continuous effort over **several years to a decade; t**herefore, it is crucial to **secure funding over several consecutive years**.

The SCRS strongly encourages the Commission to consider a **research TAC** set aside to help fund the GBYP for the coming year.

- A research allocation **up to of 50 t** could be quite beneficial in supporting the GBYP research enterprise while reducing the necessity for voluntary contributions for the program.

- For year **2013 and hereafter**, such a scientific TAC could fully fund the GBYP if the allocation may reach up to **320 t / year** (about 2.5% of the current TAC).

- This scientific quota could be managed by ICCAT Secretariat.

Other recommendations

- Pilot studies using dual camera systems to retrieve the size of fish at the location of the catch (or close to) were presented at the SCRS in 2011. The results being encouraging, the SCRS strongly recommends that the CPCs carry on these studies, so that **stereoscopic camera systems** become operational as soon as possible.

- In order to improve the utility of **BCD** for scientific use, the Commission should implement **electronic reporting** forms and formats for transmission of the data to the Secretariat in order to improve the availability of complete data to the SCRS for cross-validation.