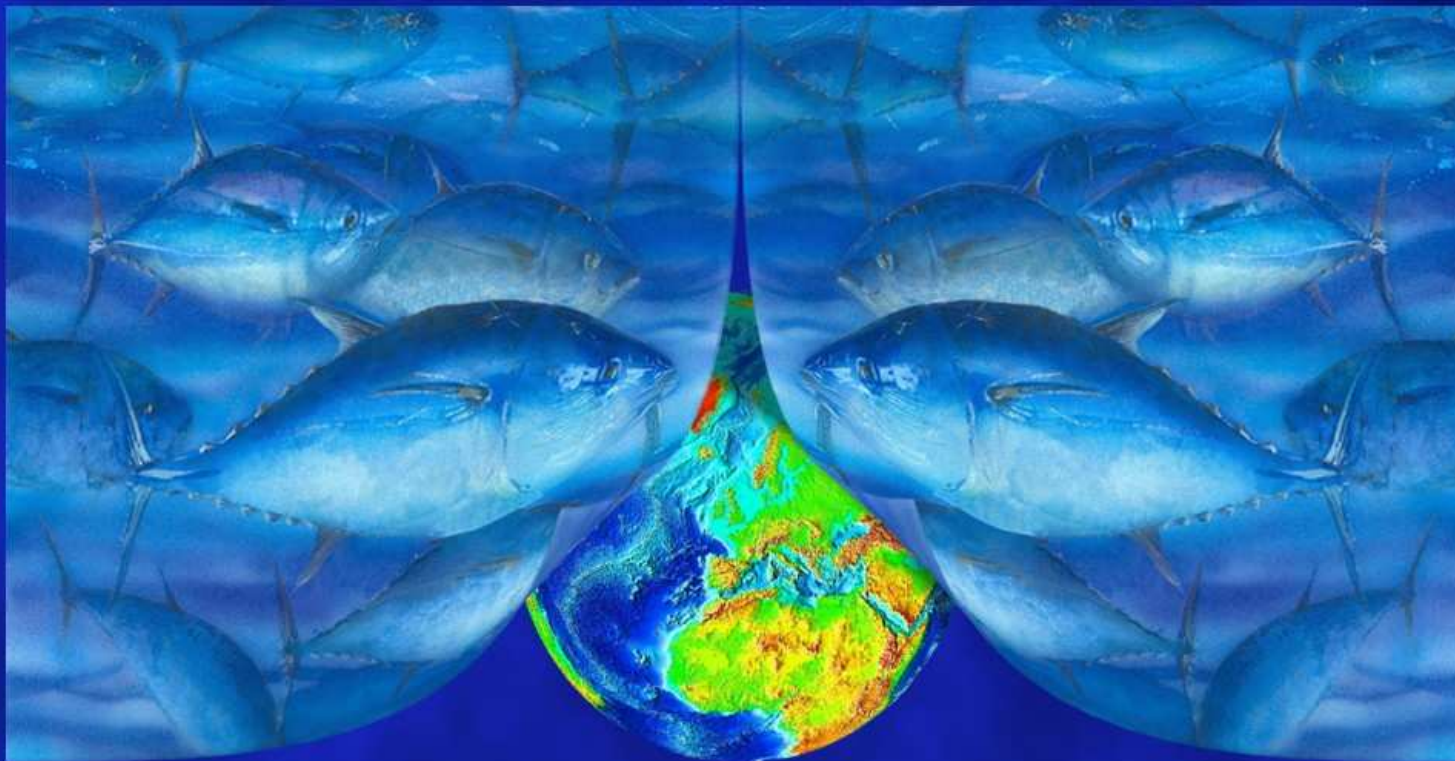


***WORLD SYMPOSIUM FOR THE STUDY INTO THE STOCK
FLUCTUATION OF NORTHERN BLUEFIN TUNAS
(THUNNUS THYNNUS AND THUNNUS ORIENTALIS),
INCLUDING THE HISTORIC PERIODS.***

SANTANDER

**22-24 APRIL
2008**

SPAIN



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**Bluefin fishing off the Trebeurden Bay,
Northern Brittany,
during the 1946 - 1953 period**

By Alain Fonteneau and André Le Person

Overview

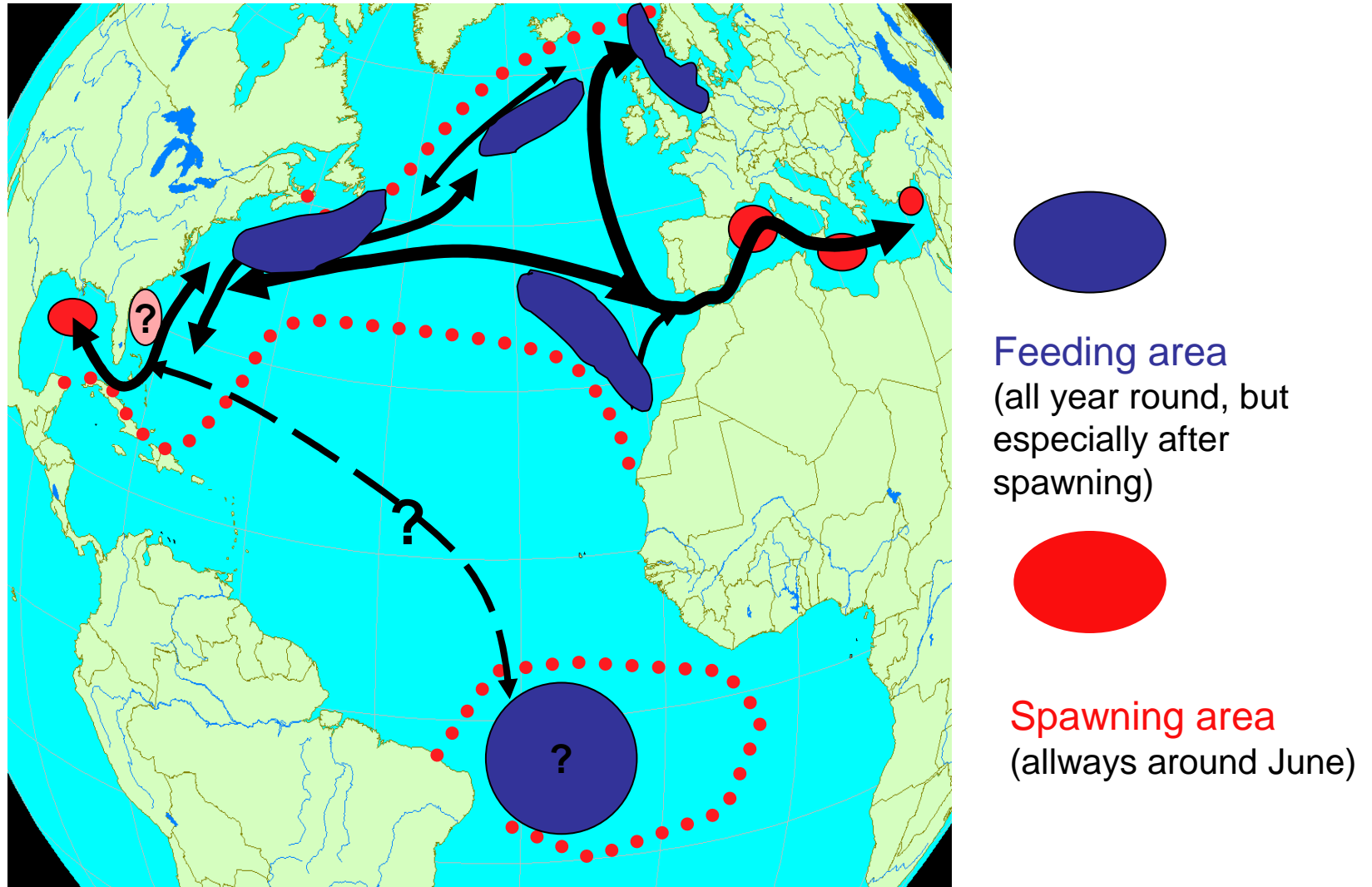
- A geographical overview of bluefin migratory routes
- An history of the small scale traditional sardine fishery off Trebeurden Bay
- 1946-1953: An historical overview of 8 years of giant bluefin seasonal sport fishery in Trebeurden Bay
- What interpretation for these Trebeurden Bay giant BFT?
- Conclusion



A geographical overview of bluefin migratory routes in the Northern Atlantic

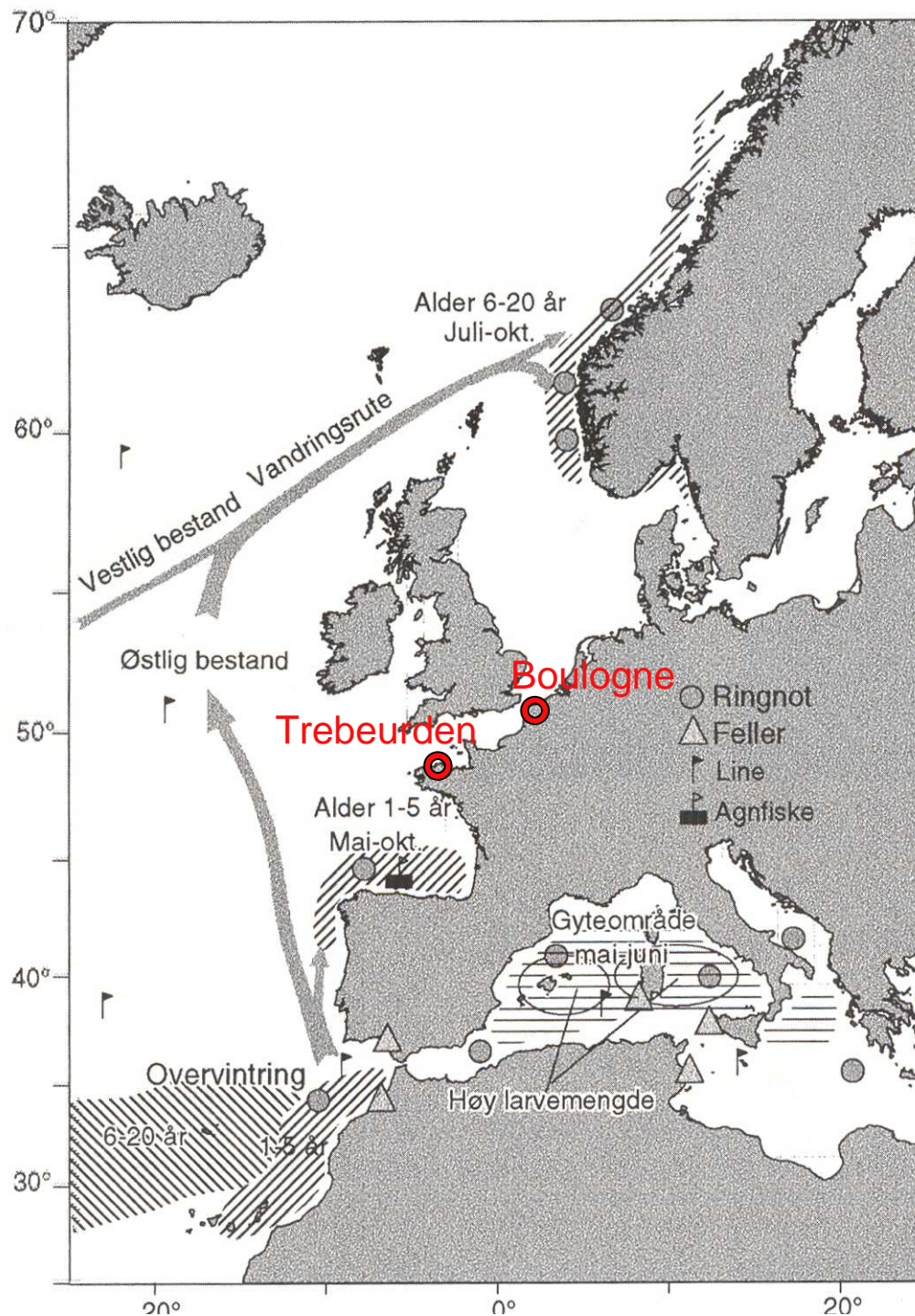


Bluefin tunas are the most typical migratory fishes, and they have been actively fished during milleniums during these migrations



Bluefin tuna

Unique characteristics among all other tunas: a complex and variable geographical distribution and migration patterns, doing a wide range of potential feeding and spawning migrations



There are well documented yearly bluefin migrations (figure taken from O. Tangen):

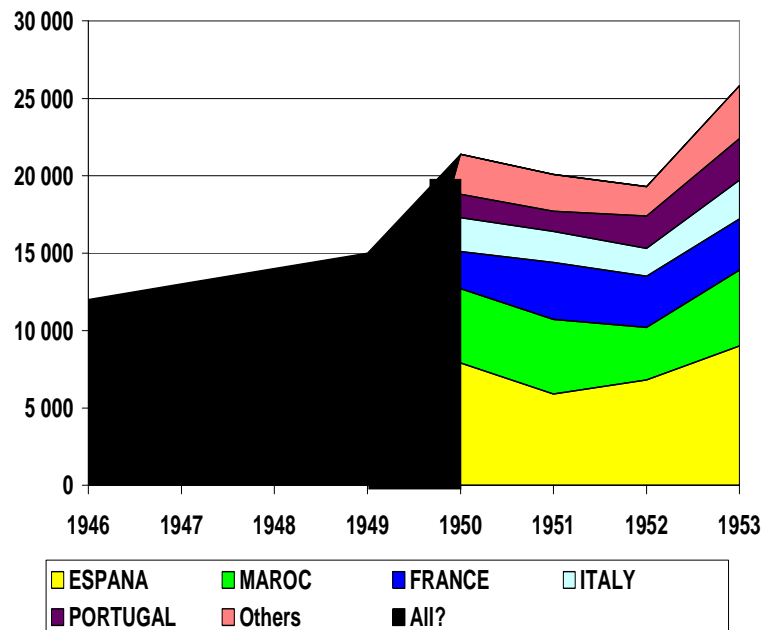
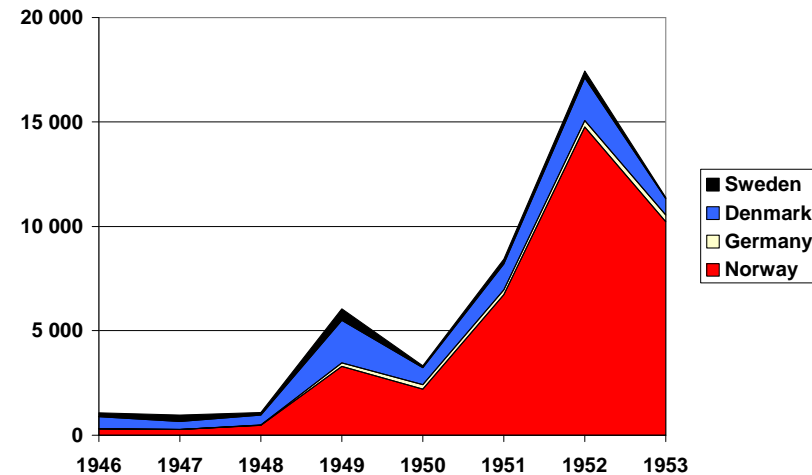
🐟 Post spawning large bluefin from both the Western Atlantic and the Mediterranean Sea doing a yearly feeding migration towards Norwegian coasts and the North Sea (including the entrance of the Baltic Sea), after their spawning in June.

🐟 A migration taking place at least during most of the 20th century, but vanishing during the seventies

🐟 But presence of bluefin have seldom been noticed by scientists in the British Channel, and most of the theoretical bluefin migratory routes tend to be off Scotland

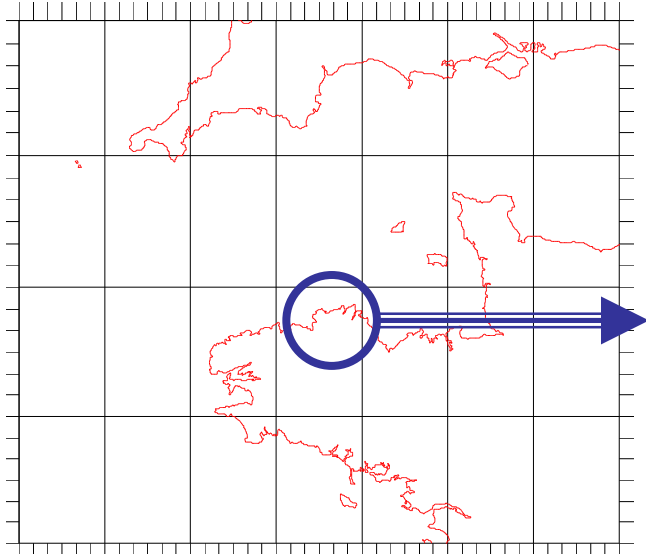
🐟 but Boulogne and Trebeurden bluefin tunas could change this potential itinerary

1946-1963: post war bluefin fisheries are back



>> North Sea: birth of large scale industrial bluefin fisheries

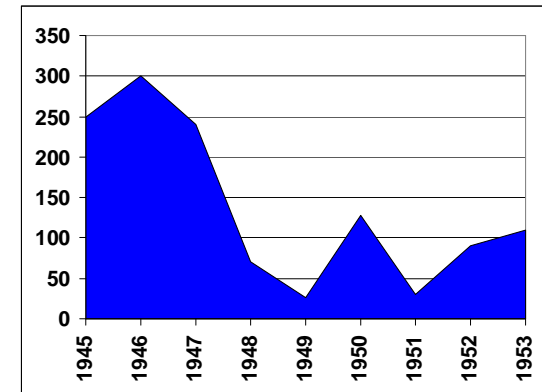
>> Mediteranean Sea: many bluefin fisheries were still active during and immediately after WW2



Our bluefin story of today takes place in Northern Brittany after World War 2, in the bay of Trebeurden, and in the 2 very small fishing ports of Trebeurden and Locquemeau

The small scale traditional sardine fishery off Trebeurden Bay, Brittany

- An old fishery: a dozen boats in 1870, and 70 vessels in 1880
- Typical fishing vessels: a few dozens of sailing boats with 2 masts and a small crew, the « flambart »
- Small yearly catches < 300 tons
- *Sardines were fished each year from May (some years since March) to October (or November some years), with the recruitment during August of juveniles sardines, in a size range between 4 and 5 cm (possibly good food for BFT)*



Yearly sardine catches 1945-1953

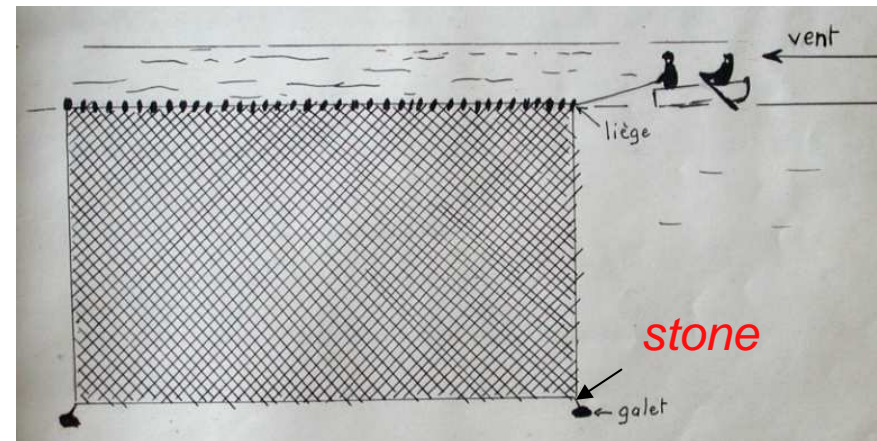


A typical « flambart »

- A fishery using a straight drift net, about 50 meters long and a depth of only 3 to 4 meters; sardines are attracted towards the drifting nets by cod eggs, or « rogue » (imported from Norway, as BFT!)
- The sardines were simply « netted »: a good catch being 300 kg of sardines in a set/day
- The major difficulty in the fishery was the local abundance of 3 enemies: sharks, porpoise and bluefin tunas, as these top predators produced an irreversible fuite of sardines and also serious damages in the nets.
- From fishermen testimonies (Yves Allain), porpoise and BFT had different feeding behavior: porpoises were often entangled in the net, and destroying it, while tunas were feeding on sardines already entangled or not, but without being entangled in the net.
- The last local sardines were caught in 1956, sold in the Trebeurden streets (and never came back)



Drying drifting nets



Setting the drifting net



A sardine vessel bringing on board its catches of sardines entangled in the driftnet



A typical sardine vessel from the Trebeurden/Locquemeau area sailing towards its sardine fishing zone

1946-1953: 8 years of giant bluefin seasonal sport fishery in the Trebeurden Bay



- 🐟 Summer of 1946: the first full summer after WW2, and the 1st bluefin caught off Trebeurden
- 🐟 It was not a sport fishing action: Dr Miroux used a Mauser gun, a harpoon and a rope used by mountaineers to climb.
- 🐟 First technical experiments done by Dr Miroux at the Trebeurden harbour
- 🐟 October 1946 a successful fishing trip by Dr Miroux and Charles Ritz, a well known sport fisherman: a first bluefin harpooned: 2,50m and 175 kg
- 🐟 This was the proof and a surprise for everybody, including fishermen: bluefin were present in the area while surprisingly up to then, these large BFT were still entirely cryptic, and never identified before by fishermen (for instance jumping out of the water).

October 1946: Dr Miroux doing his first successful experiment to catch giant bluefin with a mauser gun and a harpoon



August-September 1947: The birth of a surprising new bluefin sport fishery

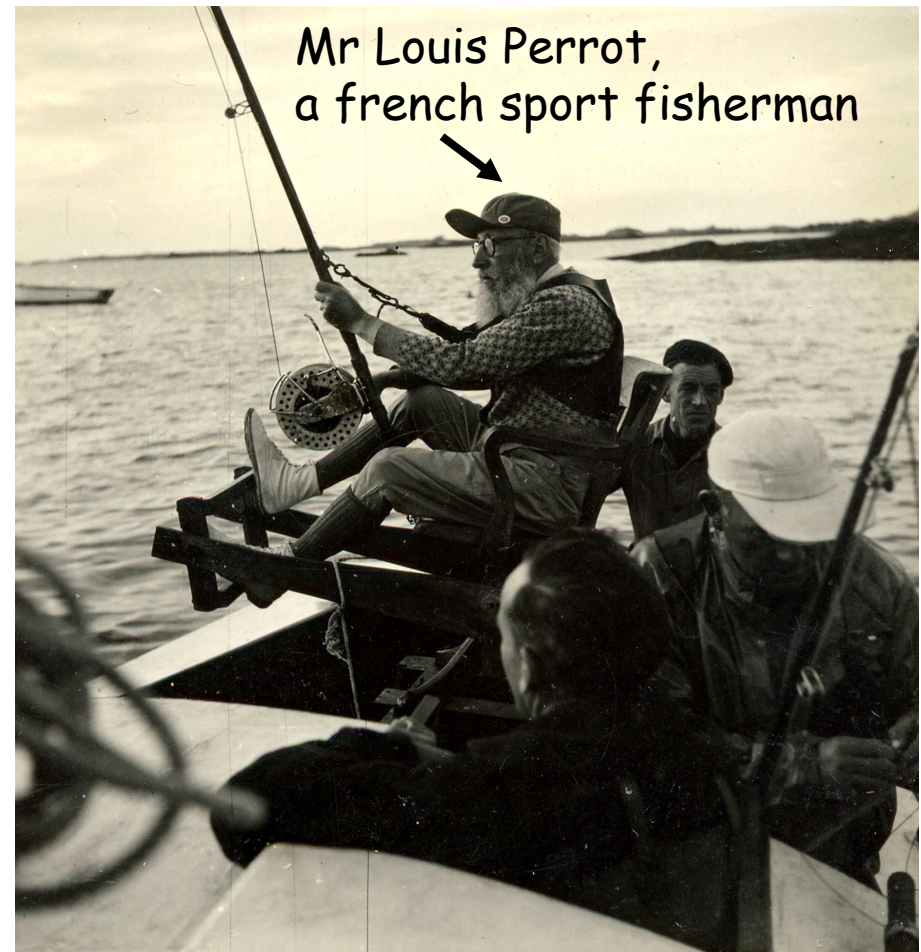
*a team of experienced US sport fishermen reinforces the britton
amateurs*

- Michael and Helène Lerner, and Tony Burnand, came from the US with a full staff of assistants, bringing their wide experience, and a lot of sophisticated fishing gears and their outboard engines that were still missing in Brittany
- But the local fishing boats were still used with minor technical adjustments
- A sport fishery following all the international IGFA rules
- They caught large numbers of giant bluefin in full cooperation with the local sport and sardine fishermen





Brittany, 1948:
a traditional sport fishing vessel

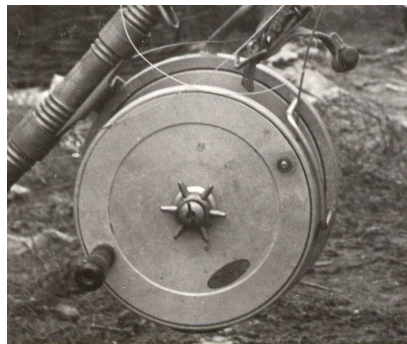


Mr Louis Perrot,
a french sport fisherman

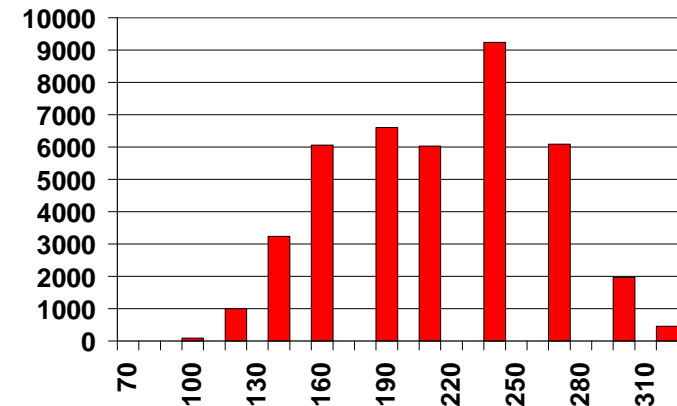
- The « ad hoc » sport fishing vessel is a traditional wooden fishing boat from Brittany, specially equipped with an outboard engine imported from the USA, and equipped with a home made fishing chair placed in the bow of the boat
- The bluefin fishing spots were located in shallow waters, at very short distances from the coast, and very close to the 2 fishing ports of Trebeurden and Locquemeau, allowing a quick and easy access to the tuna grounds

Variability of bluefin catches & sizes taken

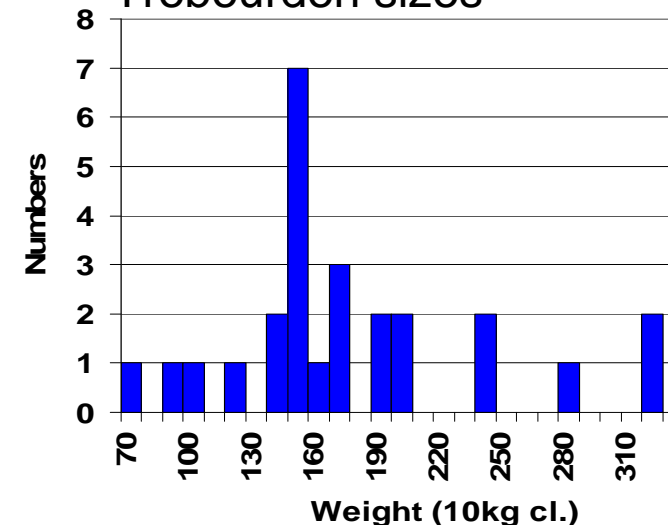
- Year to year variability: some years were quite poor, 1948(bad weather) and 1953 (the last sardine and bluefin year), while other years such as 1949 were excellent
- Seasonality of this BFT fishery: the season was quite short and peculiar, in general between August 25th and September 15th (and, during some years, with some additional weeks before and after)
- Sizes caught: an estimated average weight of 175 kg, in a range between 76 and 322 kg, i.e. a quite wide range of ages between 8 and 15 years (and a mode at about 10 years).
- Sizes taken were similar to North Sea bluefin caught by Purse Seiners, their smaller sizes being possibly due to the difficulties to catch the larger giant bluefin using the historical rod and reel and the Trebeurden fishing vessels

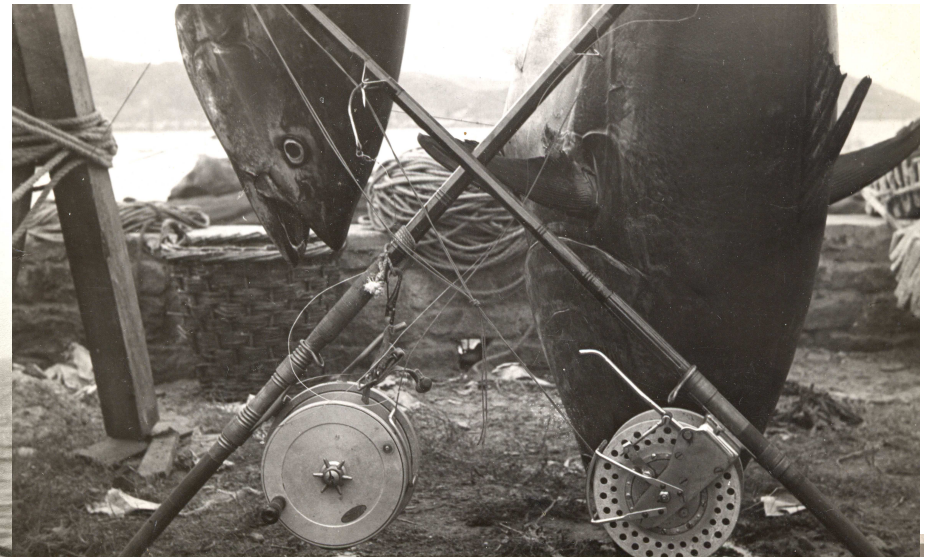


Nordic sizes

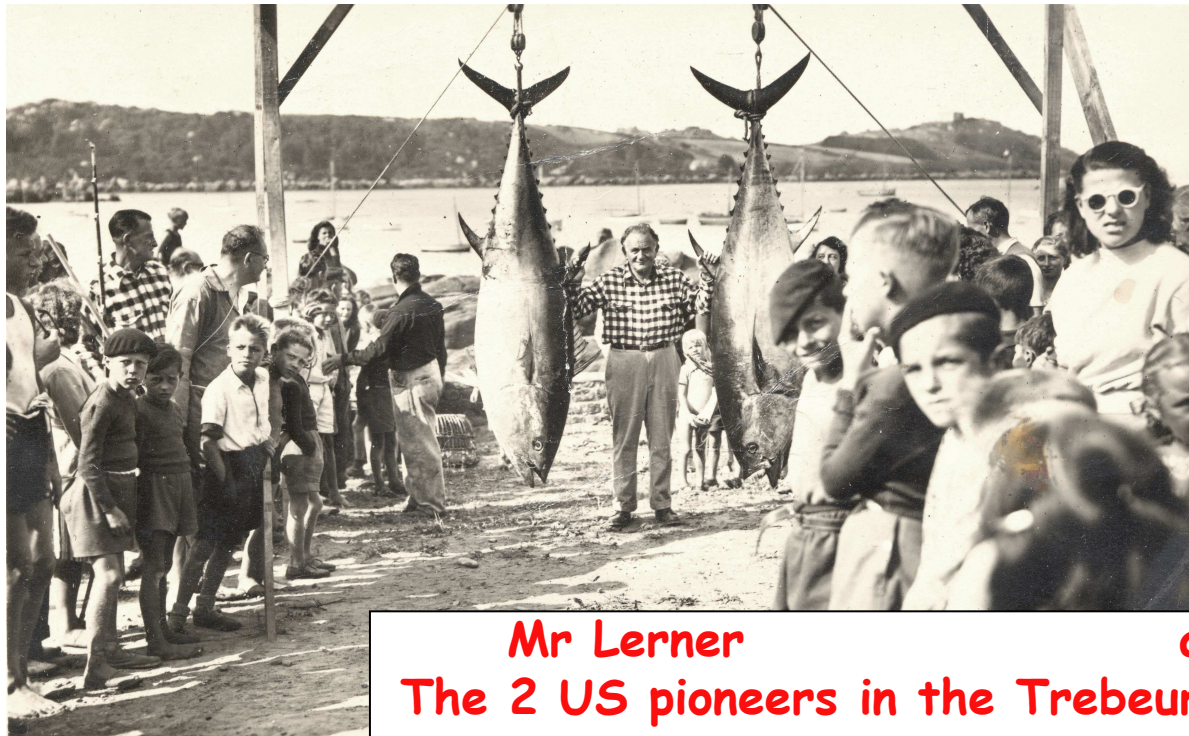


Trebeurden sizes





*All good wishes -
Sincerely,
Shelia Lerner
September 27, 1941*



**Mr Lerner and Mrs Lerner
The 2 US pioneers in the Trebeurden Bluefin sport fishery**

September 14th 1953: *the last bluefin caught in
the Trebeurden Bay*

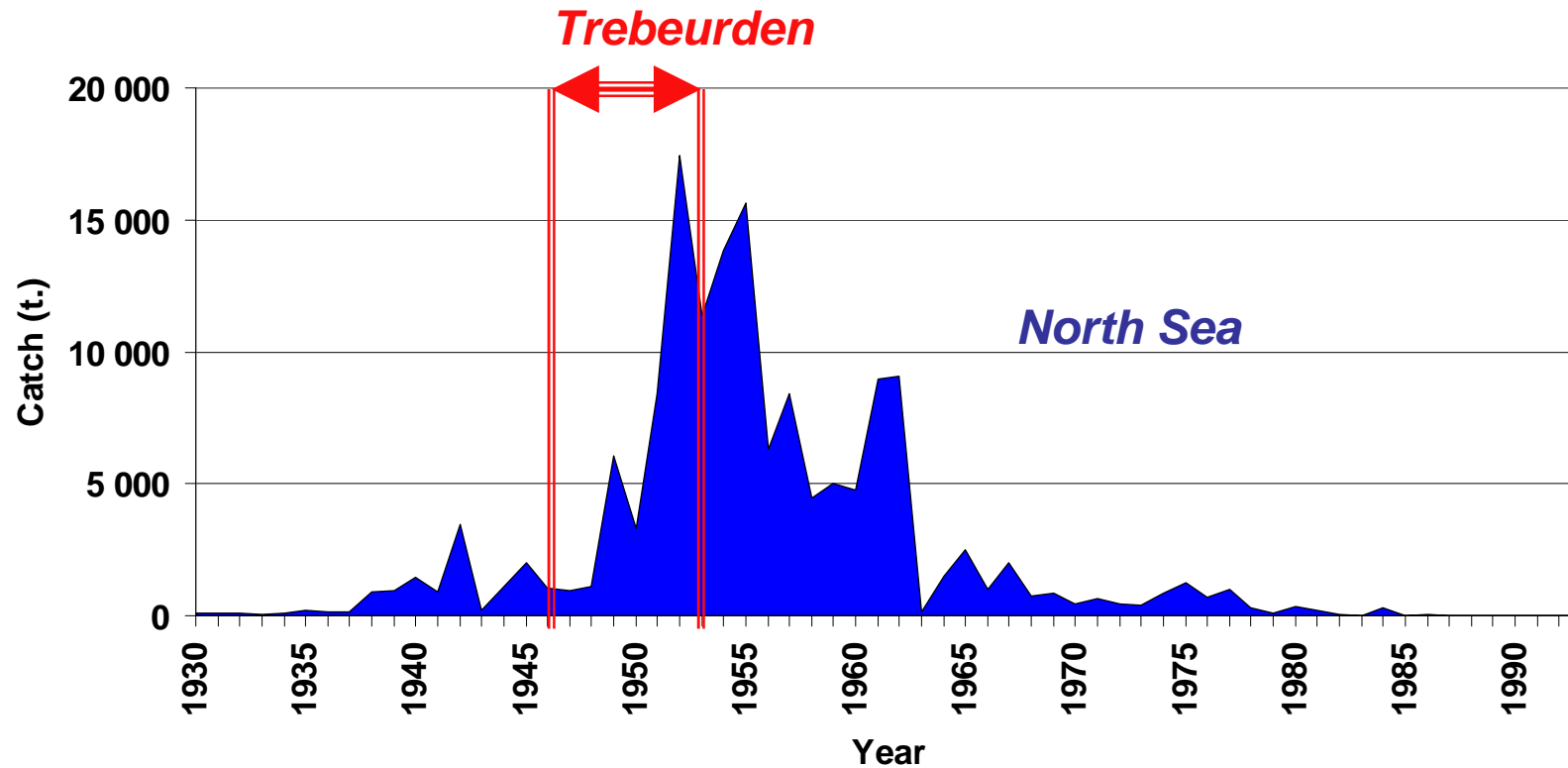


A giant bluefin of 197 kg caught by a british sport fisherman, Mr Clifford Stubbings, on board the Loquemeau fishing vessel Caot Glas and its famous captain Efflam Coadalen (2nd from the left)

What interpretation for these Trebeurden Bay giant Bluefin?

- ✓ Adult bluefin tunas, at sizes similar to typical Norwegian bluefin during this period were probably taken in Trebeurden Bay in their backward migration from the North Sea
- ✓ Similar sizes of large bluefin were caught during the 8 year period
- ✓ These bluefin feeding on sardines (preferably juveniles) in Brittany, after feeding predominantly on (juvenile) herrings in the North Sea.
- ✓ It can be envisaged from various fishermen indirect testimonies that these bluefin were also common in the area during the 30ies, a period with a local sardine fishery.
- ✓ This Trebeurden hot spot was probably linked to the bluefin memory to remember an interesting known feeding zone,
- ✓ and also to a fidelity for this feeding spot, acquired by a given micro-cohort of BFT; biological characteristics well demonstrated for southern bluefin tagged by archival tags
- ✓ and also to an efficient navigational ability to come back to this peculiar coastal feeding hot spot
- ✓ Bluefin tunas were also described as being common in the sardine fishery of the Douarnenez Bay, at the Western edge of Brittany, an area with a long history of active sardine fisheries, but they were never caught by any sardine or sport fishermen

When the sardines disappeared from the Trebeurden area, bluefin did not come back to the Trebeurden Bay during their migration from the North Sea, while it should be kept in mind that large quantities of giant bluefin were taken in the North Sea until the mid- sixties

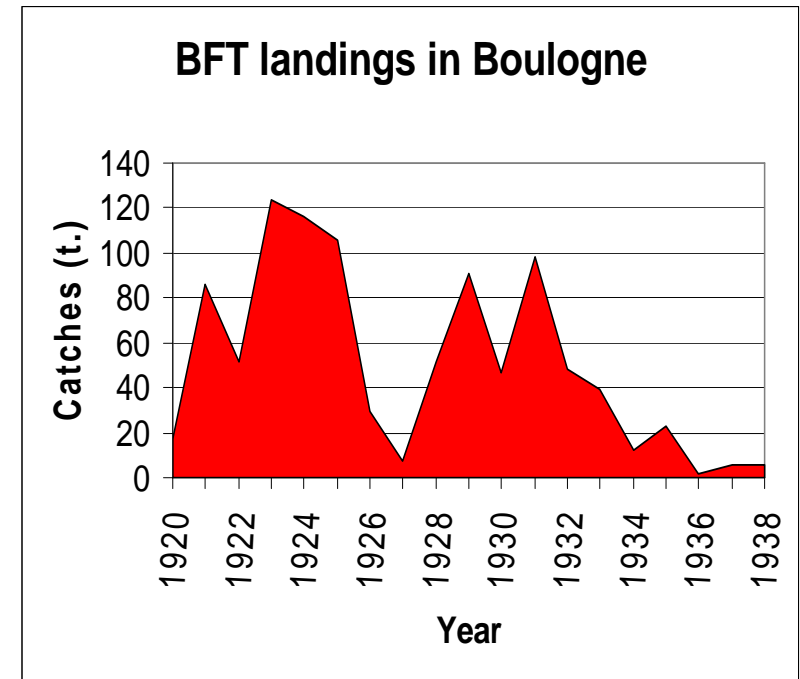
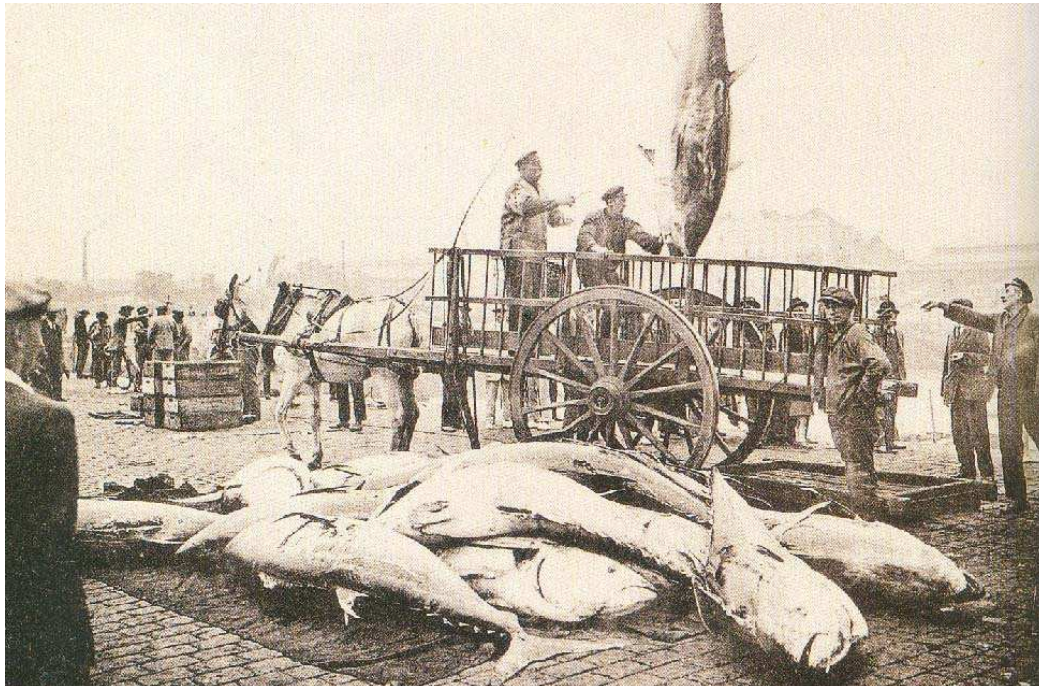


Yearly catches of bluefin, taken by North Sea fisheries, predominantly at large sizes
The period during which giant bluefin were caught in the Trebeurden Bay is also shown.

What itineraries for Bluefin migrations?

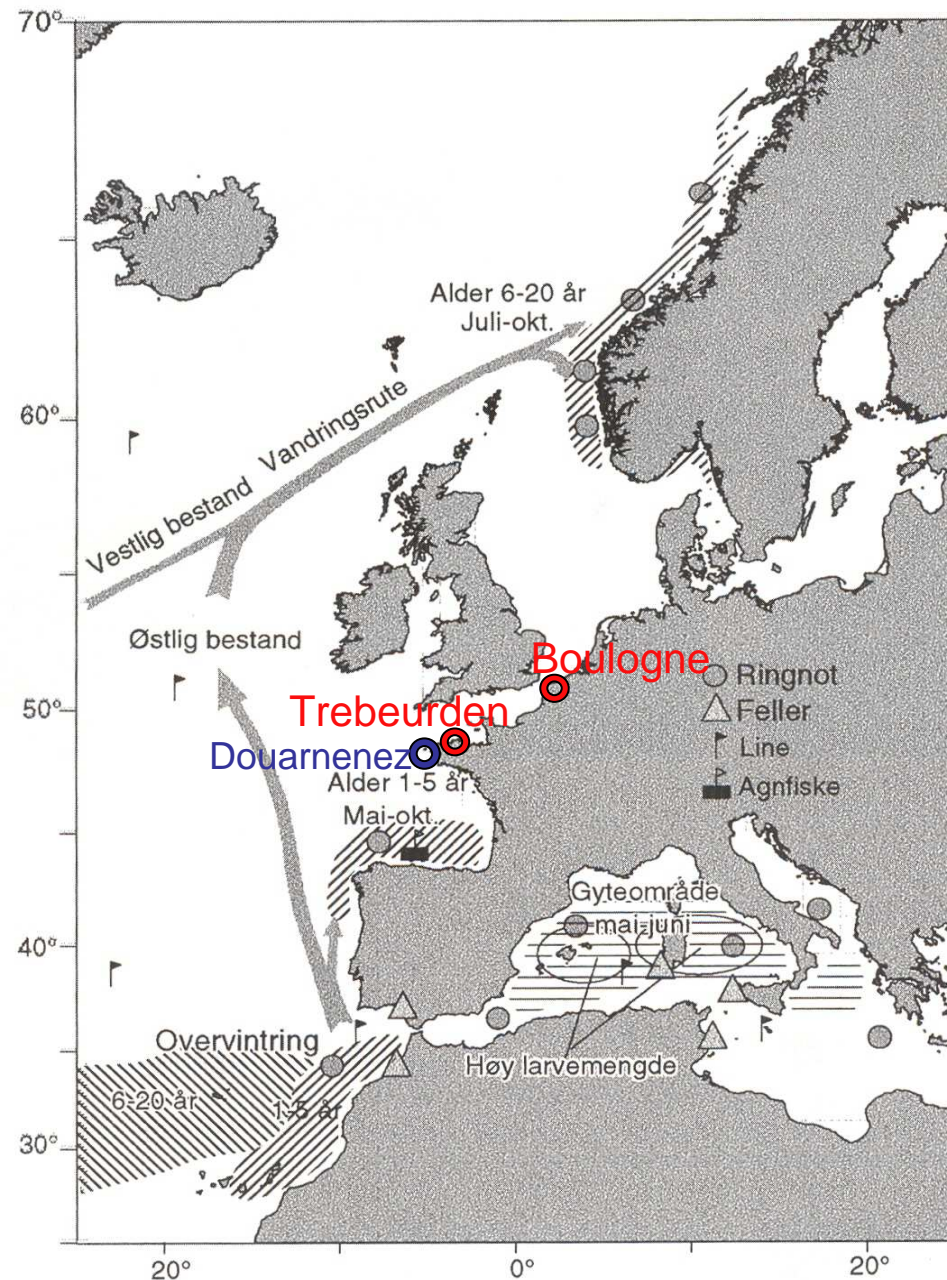
A British Channel migration route?

- Probably a confirmation that North Sea and the British Channel were also a migration route for bluefin, at least during their return from the North Sea
- An hypothesis also confirmed by the frequent catches of giant bluefin taken as a by-catch off Boulogne sur Mer



Yearly by-catches of bluefin taken at the entrance of the British Channel by the herring fishery from Boulogne

- ✓ It is not clear if these schools of bluefin moving back home from the North Sea were going to the Central Atlantic and/or Mediterranean Sea or/and the Western Atlantic
- ✓ Both hypotheses could be realistic, as large percentages of these 2 sub-populations were identified (from tagging and from fishermen's testimonies) feeding in the North Sea during these years



Conclusion:

- This vanished sport fishery is another good example of the rather unique but typical flexibility of bluefin feeding zones and of their strange and highly variable migration patterns,
- A confirmation that these giant bluefin may remain cryptic for fishermen during many years;
- Similar cryptic biomass of giant bluefin was also frequently reported by fishermen's testimonies in the other sardine fishery in the Bay of Douarnenez, but these bluefin were never caught.
- A confirmation that sport fishermen can provide very useful information to scientists
- Probably a confirmation that the British Channel was also used by bluefin, at least in some of its migration back home,
- A clear confirmation that bluefin feeding concentrations and local fisheries can be driven by the great local variability of small pelagic resources, independently of bluefin stock biomass: such local CPUE should never be used in assessment models as being indicators of stock biomass!
- This event also supports the hypothesis of the bluefin capabilities to repeat, during several years, its newly discovered feeding routes that are targeting very small feeding hot spots
- In terms of sport fisheries, this local historical event would have been widely different today: probably producing much larger bluefin catches, with plenty of sport fishing boats, echo sounders, GPS, radio, plenty of experienced sport fishermen, communication by Internet VMS, and so many intercontinental airlines.



And thank you for your attention!