



Book of Abstracts

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Invasive marine species, shifting baselines and the value of a historical perspective

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Assessments of invasive marine species are often made in the contemporary setting, which can be inconsistent with the length of time over which species have been introduced and environmental change has occurred. We developed a model for decision-making that disregarded and integrated historical baselines when considering invasive marine species, and tested the model using an established cryptogenic (introduced) pearl oyster in southern Australia. Historical information regarding the past distribution of a native oyster, the loss of reefs that species once formed and its interaction with razorfish (fan shells), was identified. Disregarding this information led to the pearl oyster being considered highly invasive and worthy of eradication, but, by integrating the baseline of historical oyster reefs it was resolved that the pearl oyster effected individual razorfish health but did not negatively impact the population as a whole. The management action ascribed was consequently control of the pearl oyster through resource use. The interaction was validated experimentally, using a field manipulation where assemblages of pearl oysters attached to individual razorfish were translocated between sites of varying oyster density. We discuss the value of considering history in invasive species management, and the application of experimental manipulation as a method for historical analysis.

Presentation type: Oral

Planning for food security: applying historical baselines to aquaculture development

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Securing a sustainable food supply is a global issue that will be increasingly challenged by human population growth. Seafood is an important source in many countries and aquaculture provides a means to meet future needs. Using examples from southern Australia, we illustrate and discuss the application of historical data and baselines to aquaculture planning and production. Knowledge of past losses through overexploitation of the native mud oyster *Ostrea angasi* was used to discuss opportunities for aquaculture and reconstruct estimates of historical biomass to evaluate contemporary stocking densities, of both the native species and a non-native (*Crassostrea gigas*). This led to the regulatory inclusion of new areas for farming and reconsideration of target production tonnages within existing areas. Historical records of failed translocations of the non-native oyster *Saccostrea glomerata*, from 1866 through 1977, were used to assess the biosecurity risk of initiating aquaculture for this species. An outcome of this was the development of a process for integrating historical data into semiquantitative risk assessments. We discuss our approach to overcoming the methodological challenges associated with using historical data in planning and policy, the efficacy of the work in informing targets, and the value of applying past baselines to aquaculture development.

Presentation type: Oral

Fishermen's ecological awareness practices: productive or predator? The historical construction of an idea (19th)

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A debate, since the end of 18th, unfolds a plural and contradictory speech: for institutional side, developing a statistical program to assess the sector's potential, and cultural and social side, as fisherman became the object of observation in itself, a source of information in the context of a growing sensitivity to work issues. In the first case it was necessary to verify the amount of vessels, fishermen, techniques, fish values, characteristics and state of stocks. In the second case, creating categories of fishermen, between inshore fishermen classified as “predators” and offshore fishermen as “the true fishermen”.

Using literary sources, inquiries, brotherhoods statutes and regulations we aim to understand in what context arises this dividing line between fishermen typologies, when, where, why, and how fishermen reacted to these conceptions and justify and deconstruct the attributes associated with each type of fisherman under fishing industrialization context and ecological concerns. That is, understand a history of practices and attitudes relating to fisheries and the development of an ecological conscience of the limits of marine resources for food and realize how ideology became an activator of governance fishing in Portugal in its relationship with Europe, Morocco and North America at the end of 19th century.

Presentation type: Oral

When preys become predators: long-term time series reveal paradoxical effects of nutrient enrichment on pelagic fish

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Pelagic fisheries are often thought to benefit from anthropogenic nutrient enrichment, because increased planktonic production supports pelagic fish biomass. Here we show that pelagic fish actually respond in markedly different ways to eutrophication, with losers and winners depending on size-based population traits and trophic interactions. Using analyses of long-term (1945-2013) time series from the Adriatic Sea (pelagic fish landings, fishing capacity, fish/plankton abundance from scientific surveys, land-based nutrient loads, environmental parameters) integrated with an Ecopath-with-Ecosim food web model, we developed and tested a novel conceptual model of the ecosystem, successfully linking the previously-unexplained collapse of mackerel, a medium-sized pelagic fish, in the sixties to the concurrent onset of eutrophication. The trend in abundance of mackerel was paradoxically opposite to those of cultural eutrophication and the biomass of its small pelagic fish preys. We suggest that before the collapse, the abundant mackerel, predated upon small pelagics (anchovy, sardine) which are competitors for zooplankton and/or fish egg predators, was protecting its juveniles. Then, eutrophication favored the smaller, faster-growing pelagics with respect to mackerel, triggering a self-reinforcing feedback: more small pelagics eating zooplankton and mackerel eggs, less mackerel, lower predation on small pelagics, more small pelagics.

Presentation type: Oral

A public Geographic Information System for historic Canadian groundfish and small pelagic tagging studies conducted west of Newfoundland in the years 1953-1999

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Historic groundfish and small pelagic tagging data for almost every Canadian study conducted west of Newfoundland Canada for years 1953-99 are now available as a publicly accessible interactive Geographic Information System (GIS) on the public internet (Fig. 1). This includes: 237,670 release locations provided by fisheries scientists and 38,786 recapture locations provided by fishermen for 10 commercial species (Table 1). Species metadata, release and capture locations and straight line tracks (start/end positions) were extracted from the Ocean Biogeographic Information System (OBIS), summarized, joined and filtered using PostgreSQL/PostGIS queries and saved to comma separated values (CSV) files. Low cost paths (polylines) avoiding land were created in R using *marmap* and *gdistance* packages and saved as compressed shapefiles. CSV and shapefiles were uploaded to ArcGIS Online, saved as features and combined into a single map where anonymous public users have full interactive control of selection, colour, transparency, size and style of points, lines, legends and basemap. Popups give: photographs from World Register of Marine Species (WoRMS) and FishBase galleries, links to OBIS, WoRMS and FishBase and release/capture counts. NorthWest Atlantic Fishing Organization (NAFO) fishing areas and Petroleum Vulnerability Assessment (PVA) polygons provide starting points for ad-hoc spatial analysis.

Presentation type: Poster

The biology of a myth: How historical sources help explaining patterns of cetaceans' occurrence

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In Portugal people are, historically, aware of the local presence of cetaceans. Sayings long existed regarding a former population of resident dolphins in the Tagus Estuary (Lisbon, Portugal) that had supposedly disappeared from the area, by the 1960s, due to poor environmental conditions. Moreover, for centuries it has been said that mermaids, mermen, and other fantastic marine beings lived in that region. A review (chronicles, naturalists' papers, newspapers, oral stories, photographs, strandings and sightings) was conducted allowing for the gathering of information on cetaceans' presence. We found historical evidence (as early as the 16th century) for the occurrence of cetaceans that might have been the source for the legends and myths perpetuated. There is also a regular, but episodic, presence of cetaceans in this area but no evidence of a resident population of dolphins occurring at any time for the past 100 years. The possible increasing in recent observations of dolphins in the Tagus estuary, resulting mainly from the public awareness, may have lead to a mistaken perception of changes occurring in the ecosystem. The compilation of different types of data helps reconstructing local (or global) histories of cetaceans' occurrence and an integrated analysis of offers biologists and policy-makers new important sources of information.

Presentation type: Oral

Prevent history repeating: identifying historical disappearance to predict contemporary exploited species vulnerable to extinction

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Without an understanding of historical baselines, dramatic declines in population abundance and even extinctions can occur undetected. In particular, the historical exploitation and susceptibility of tropical marine species to extinction is rarely investigated. By comparing archaeological records (750- 1500AD) with contemporary catch (1995-2103) and underwater visual censuses (UVC) (1987-2013) from coastal Kenya, we revealed that 81% of the tropical marine fish species that were historically exploited are now absent. We established a list of threatened coral reef fish species by conducting presence/absence tests using combinations of the catch data, archaeological records, and UVC with the modern species list. We verified the historical decline and disappearance of threatened fish species using 288 interviews with fisher, divers and fish traders and corroborated with UVC (2013-2014). Identifying decline and local extinction of historically exploited species enabled us to predict the contemporary exploited species that exhibit similar vulnerability to extinction using fuzzy logic analysis. Knowledge gained from this research will contribute to ongoing local conservation priorities by raising awareness amongst stakeholders of species at most risk to local extinction. The results are also relevant for species-specific management and prioritization of species for conservation.

Presentation type: Oral

The Heritage of the Sea: The Zoology Collections of Marine Adriatic Fauna

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The historical study of complex phenomena such as ecological changes in marine environments contributes significantly to the understanding of the present condition and future developments. The Adriatic represents an excellent case study since it has a remarkably long tradition of exploitation and fishery. Historical information and non-traditional data sets may help in setting appropriate conservation and fisheries management goals, including targets for assessing the recovery not only of endangered species (e.g. abundance, size structure, and spatial distribution), but also of food webs and whole ecosystems. The scrutiny of historical naturalistic heritage preserved in natural history museums can provide meaningful information about the past and present condition of the marine environments and their exploitation. In order to depict a comprehensive picture of Adriatic zoological history, this study focuses on the historical collections of marine animals of Adriatic Sea origin, hosted at the Museum of Adriatic Zoology in Chioggia and Museum of Zoology in Padova. The collections are the products of the collecting activities in the decades between the second half of the eighteenth century and the Second World War. Through the study of these relevant specimens it will become possible to reconstruct the past state of Adriatic area.

Presentation type: Poster

Natural disasters in Indo-Pacific fisheries history: examples from the pearling industry.

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New geological research and the reappraisal of extant historical sources is revealing Indo-Pacific history to be more susceptible to natural hazards—earthquakes, volcanic eruptions, tsunamis, cyclones, flood and drought—than has been previously acknowledged. This is true both for the severe events that have devastating demographic, economic, social and political consequences, as well as the less severe but repetitive hazards that promote diverse forms of societal adaptation and mitigation. The catastrophic 2004 Asian Tsunami also suggests that fisheries science and governance has a stake in natural hazards through the imperative of rebuilding devastated coastal communities and restructuring fishing industries on a more sustainable basis. How have natural disaster influenced of Indo-Pacific fisheries in the past? This paper makes a preliminary attempt to answer this question by considering examples of the impact of natural hazards on the pearling industries of this region. Pearling has an important place in the historical development of Indo-Pacific fisheries. It was an industry conducted widely across South and Southeast Asia and Northern Australia, producing commodities (pearls and mother-of-pearl) for long-distance trade throughout the era marked by the advent and spread of European imperialism in the Indo-Pacific, leaving a body of historical sources that extends back much further than the bulk of records that relate to general sea fishing in this part of the world.

Presentation type: Oral

The environmental history of tuna fishing in Portugal: A nine century old story

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Several species of tuna migrate along the Portuguese mainland coast, coming from the North Atlantic to their spawning grounds in the Mediterranean, leading to the development of dedicated fishing activities since the Antiquity. Medieval and early modern fishing using almadravas (traps) was common especially in the South coast of Portugal (Algarve). By the eighteenth century, tuna fishery was so intensive that a Portuguese Royal Company of Fisheries was created to manage it. During World War II, the increased demand for canned fish greatly benefited the industry, which afterwards suffered a strong decrease war. An updated approach to these matters, based on Portuguese historical sources and fishing statistics, is the goal of the present work. According to Portuguese statistics, between 1896 and 2011, more than 100.000 tons of tuna were captured in Portugal. While the number of the caught has significantly decreased, the current value of its annual catch in Portugal reaches the 25 million euros, while ten years ago was equivalent to 10 million. The exploitation of tuna has a long history which, in Portugal, peaked at certain times over the centuries. An analysis based on the marine environmental history methodologies allows understanding the past of natural populations but more importantly to contribute to present day knowledge and conservation of valuable marine resources such as tuna.

Presentation type: Poster

Reconstructing sharks decline in the Central-Western Mediterranean: the case study of *Mustelus mustelus*.

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Recently, a plethora of studies have shown elasmobranchs decline worldwide due to overfishing. Mediterranean basin is a highly overexploited sea hosting many species of elasmobranchs. We collected records from catch, reported and unreported landings, discards occurred during the 20th century to assess trends in abundance and distribution of the smooth-hound (*Mustelus mustelus*), in the Mediterranean basin. In Western Mediterranean, smooth-hound has quickly declined after the World War II, disappearing in '80s-90s in most of the area. In other parts of Mediterranean Sea (e.g. Ionian sea, Adriatic Sea) it is still present but at very low abundance if compared with the historical records. The Strait of Sicily, Tunisian plateau/Gulf of Sidra, are the only areas where *M. mustelus* populations appear still stable and large specimens are regularly caught. World Conservation Union (IUCN) considers the smooth-hound a vulnerable species in Mediterranean but the lack of studies on its key ecological aspects might have led to an overoptimistic evaluation of the species status. Results of our study contribute to highlight the current status of smooth-hound in Mediterranean providing the scientific background necessary to set up a suitable conservation and management scheme to safeguard the stable populations and restore the collapsed ones.

Presentetion type: Poster

Reconstructing historical baselines and predicting management outcomes for *bacalao* at the Galápagos Marine Reserve, Ecuador

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Reflection on the HMAP project and transition to the Oceans Past Initiative identified a lack of studies in South America. We have undertaken research at the Galápagos Islands, Ecuador, investigating grouper, locally referred to as *bacalao*, historically an important economic and cultural marine resource. Presently *bacalao* is listed on the IUCN Red List as vulnerable due to declining fisheries catches and limited geographic range. We partnered with the Charles Darwin Foundation, the official scientific advisor to the managers of the Galápagos Marine Reserve, to take stock of present *bacalao* populations, reconstruct historical baselines, and run future management scenarios. Our research approach incorporated historical photographs, fishers' ecological knowledge, patchy fisheries data, fisheries export data, and recent ecological surveys to reconstruct the exploitation history of *bacalao* through the last 100 years. We then developed a bioeconomic fisheries model to evaluate the tradeoffs in *bacalao* population size and fisheries catches for different marine reserve configurations and management regulations. Our results will be used to inform rezoning of the Galápagos Marine Reserve and management of *bacalao*.

Presentation type: Oral

Has human-induced eutrophication promoted production of fish in the Baltic Sea?

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Human-induced eutrophication, i.e. nutrient enrichment from land and atmosphere, is among the greatest threats to the good environmental status of the Baltic Sea. Eutrophication first became a problem in the Baltic Sea in relation to intensified industrialization and use of chemical fertilizers after the World War II. Therefore, the state similar to the 1950s is considered to reflect historical, non-impacted status, providing the basis for defining targets for nutrient reductions. There is ample evidence of negative impacts to the environment associated with eutrophication, whereas relatively little empirical evidence is available on the possible link between nutrient enrichment and enhanced fish production. The analyses conducted in this paper, based on statistical analyses of time series observations, are aimed to elucidate whether the sharp multi-fold increase in nutrient concentrations from the 1950s to the 1980s enhanced fish production. The analyses are facilitated by reconstructed historical stock dynamics (incl. growth, recruitment production) of sprat and cod, supplemented by nutrient concentrations from a 3D coupled physical-biogeochemical ocean model. The analyses of this paper provide useful insights to whether reduced fish production can be expected resulting from reduction in nutrient concentrations and be helpful for setting management targets taking into account wider ecosystem consequences.

Presentation type: Oral

ICES meets marine historical ecology: placing the history of fish and fisheries in current policy context

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Marine historical ecology has contributed significantly to our understanding of the past state of the marine environment throughout the world, under levels of human impact often very different from those nowadays. What is less widely known is that insights from marine historical ecology have already made headway into being applied to current management and policy. Here we draw attention to the applied value of marine historical ecology and demonstrate that there is a knowledge base that has the potential to be applied to management and advice, including for the development of baselines and reference levels. This is done through a variety of case studies from around the world, by outlining the problem, showing how marine historical ecology has contributed knowledge of change, and highlighting how it either has already informed current management or has the potential to do so in the future. We discuss these case studies in a framework of science-policy interface, around six themes that are frequently targeted by current marine and maritime policies: (1) climate change; (2) biodiversity and biodiversity loss; (3) ecosystem structure and functioning; (4) habitat and seafloor integrity; (5) human dimensions and governance; and (6) food security including human consumption patterns and exploitation.

Presentation type: Oral

What the world's longest fish size time-series can tell us about climate change, fishing, eutrophication and war: North Sea plaice, 1902 to now

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This presentation introduces arguably the world's longest time-series on fish size distribution – North Sea plaice *Pleuronectes platessa* – collated from logbooks archived at Cefas (UK, 1902–present) and data from ICES (1966–present). Large plaice abounded in the early 1900s when intensive trawling commenced, but already dropped in numbers before WWI. During the 1920s–1930s, fishing was intense; a lack of large plaice raised concerns of overfishing. Fishing halted during WWII, allowing plaice to recover with many large, old fish at close of war. When fishing recommenced, large fish again became scarcer in the 1950s. An unexpected prevalence of large plaice in the 1960s–1970s was likely related with eutrophication and beam-trawling resulting in high polychaete prey availability, favouring faster growth. Smaller sizes again became more prevalent from the 1980s; this may reflect climate change, fishing, and reduced eutrophication and riverine input. Stomach contents analysis confirms a long-term dietary shift, from bivalves to polychaete worms; this reflects a major reorganisation in North Sea benthos, originally dominated by slow-growing bivalves, now by rapidly-reproducing, trawling-resistant polychaetes, echinoderms and crustaceans. This exceptional time-series provides an opportunity to disentangle the cumulative effects of fishing, eutrophication, prey availability and political events, on top of climate change.

Presentation type: Oral

Adriatic selachians extinctions revisited

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Although extinction of species is an uncommon phenomenon in the marine environment, extirpations are more frequent and may represent a step towards global scale extinction. However, overestimating extinctions may be dangerous, since it may prevent the implementation of last-minute conservation actions. In the present work we integrated different sources of information, from 19th century naturalists' observations to modern scientific surveys and fishers' traditional ecological knowledge, covering approximately the last two centuries. The aim was to reconstruct Blue skate (*Dipturus batis*), Angelshark (*Squatina squatina*) and Tope shark (*Galeorhinus galeus*) historical abundance in the Adriatic Sea, and further assess if these species are actually extirpated in the area, as stated by previous authors. From historical records emerged that in the 19th and early 20th centuries these species were common in the area. Conversely, they were not caught in trawl-surveys since approximately 60 years. Historical and scientific data were integrated with traditional ecological knowledge and, according to few recent sightings, it seems that these species are not yet extirpated. However, their near loss in the Adriatic Sea is dramatically real, thus more research is urgently needed as well as effective international conservation measures.

Presentation type: Poster

The increasing of mussel farming in Mar Piccolo of Taranto (centuries XVIII-XIX)

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In the XVIII century there was the greatest transformation in the Mediterranean fishing: the big increasing of the bottom-trawling technique in the open sea, far from the shore. This was a big trouble for all the governments of ancient Italian states, who used to regulate this practice through several laws, in order to protect the marine population and the poor shore-fishermen. Taranto is a very particular case: its almost enclosed seas, Mar Grande and Mar Piccolo, were easier to control and, above all, were Royal property. Every 6 years the Royal Crown, through its Ministries, used to lease out the right to earn duties on the several permitted fishings. It used also to lease out two little portions of sea-bed, devoted to the mussel cultivation; usually this lease was less important than the first one; but from the end of the century, thanks to the Archbishop-naturalist Capecelatro's experiments, people of Taranto discovered new techniques and methods to cultivate mussels. From this time on, this activity gradually increased, becoming the main activity practiced in these seas. The mussel farmers became stronger than the other fishermen and used to win all the public tenders in these seas (even the lease on the fishing duties).

Presentation type: Oral

Cultural change and continuity in recreational fishing 1957-2000: A Western Australian case study

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The impacts of recreational fishing on marine ecosystems are increasingly acknowledged by policymakers and fisheries scientists. To date fisheries research on recreational fishing has focused on quantifying impacts through surveys and modelling, and such work is beginning to inform management of recreational fisheries. However, we still know relatively little about the suite of practices, beliefs and values associated with mainstream recreational fishing and how and why they change over time. This paper reports on historical research that utilises a long-running newspaper fishing column to identify and analyse cultural change and continuity in recreational fishing in Western Australia from 1957 to 2000. It examines how culture has played a significant role in shaping angling behaviour and thus environmental impacts, and proposes reasons for cultural change and continuity with reference to broader social, political and cultural contexts. Finally, it discusses the advantages and pitfalls of use of newspaper columns in analysis of historical change.

Presentation type: Oral

Polish catches of Baltic sprat in the context of sustainable exploitation (1908-2010)

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Analysis of variation of sprat catches in 1908-2010 indicate three main phases (1908-1914, 1937-1950, 1979-1984), in which occurred spectacular, sudden and long-lasting decline in commercial catches of this species in the south-eastern Baltic. Aforementioned collapses in Poland resulted from significant changes in the fishing-effort, -power and -techniques, and variation in some biological-hydrological parameters. The long-term decreases in sprat landings lead to market price increase and reorientation of fleet to herring, cod, and in the period of 1907-1920 to flatfishes and grey seals, inhabited nearby the Peninsula of Hel. In those 100-years, a few short-term considerable decreases in sprat landings were also noticed in Poland. These landings-calamities were preceded by the short periods with very intensive activities of fleet, and rapid increase of catches. Those historical changes can be considered as an evidence of non-sustainable exploitation of Baltic sprat by the Polish fleet. The paper, based on Polish and to some extent, foreign literature of subject, is focused on compilation and verification of various opinions concerning sprat landings-collapses in the past. This historical example can be considered as key-message to present specialists on fish stocks assessment and to managers responsible for their exploitation, preserving a sustainable fishery level.

Presentation type: Oral

A frozen economy – the impact of sea ice on 19th society and economy

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This is a presentation of a pilot study of the impact of sea ice on the economy of Göteborg (Gothenburg) and the western parts of Sweden during the 1880s. The investigation has been done by using material from newspapers, reporting every day during the winter, on the ice situation. Newspapers also give detailed accounts about economic and social effects of a long winter. This method has not been used in Sweden before to investigate the interaction between weather and society. From the same source it has also been possible to get detailed information about the extension and thickness of the ice. The pilot study was made in cooperation with Swedish Institute for the Marine Environment, and published in "Havet 1888".

Presentation type: Oral

The North Atlantic Fish Revolution, c.1500-1700

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The fish revolution 1500-1700 was catalysed by the enormous increase of supply from the NW Atlantic to the European market. The two main commodities of the fish trade were herring and cod. A satisfactory interpretation of the fish revolution must assess the relative importance of abiotic and biotic as well as human variables. While most of these factors would have been considered unknowable 10 or 15 years ago, our knowledge of abiotic factors such as temperature, wind and currents have increased tremendously, while biotic primary production and target-fish abundance and distribution have become mapable. On the demand side we know more about factors such as settlement, demography, capital, labour and technology. recent interest in consumption history has sparked research into social and cultural food preferences and the factors of politics, strategy and subsidies. The question remains, however, how to effectively integrate ecological and historical approaches, and I shall present a proposal for a research strategy based on an integrative approach to marine environment, extractions, markets, and politics.

Presentation type: Oral

The historical impact of cultural values on marine protection strategies in the Danish Wadden Sea c. 1950-2014

Anne Husum Marboe

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Since around 2000, Danish nature protection has increased focus on measuring the economic benefits of the ecosystem. But is the contemporary economical approach to nature really a new phenomenon? Is it possible that the management of nature and the environment has for long already been based on a fundamental aim of maximizing the benefit of nature exploitation? And could it be that the modern environmental economy is just the answer to current trends in nature management. Cultural values are fundamental for conservation targets and significantly influential in the process of design and management of protection of the marine environment. Understanding value systems is important to make management strategies effective and to prevent political discussions about the value of nature that are often stretched between exploitation and conservation strategies. Based on a case study in the Danish Wadden Sea this paper examines the historical impact of cultural values on the management as regards to local, national and international protection for the marine environment. The main argument in this study is a demonstration of how historical views on nature have deeply influenced the protection of the environment, yet the economical approach to nature protection tends to neglect the long term historical perspective.

Presentation type: Oral

Early Evidence of Overfishing in Scotland's Inshore Waters, ca.1840-1900

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This paper takes a mixed approach to evidence from the Fishery Board for Scotland (1809-1900) and other public bodies in order to demonstrate that the intensification of traditional (i.e. pre-trawling) fishing techniques had a significant impact on the availability of commercial 'whitefish' stocks in many of Scotland's fisheries before the middle of the nineteenth century. Placing landings data alongside and the total yardage of handlines and longlines used to catch them, it has been possible to demonstrate that whitefish were becoming significantly harder to catch around much of Scotland's coastline by around 1850. This research provides the first statistical corroboration of anecdotal evidence which was given by fishermen themselves to two British commissions of enquiry (in 1866 and 1885) about the decline of commercial whitefish around Scotland's coasts, and pushes back the use of 'catch per unit effort' as a tool in U.K. fisheries research by around 50 years. Finally, it calls into question the widespread belief (cf. Thurstan *et al* (2014) 'Origins of the Bottom Trawling Controversy in the British Isles', *Fish & Fisheries*. 15 (3) 506-522) that significant overfishing began with the development of modern fishing methods towards end of the nineteenth century.

Presentation Type: Oral

Digging into our whaling past: Addressing the Portuguese influence in the early modern exploitation of whales in the Atlantic

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Portugal and the Basque Country were important whaling locations where a whale culture developed since the Middle Age. Organized whaling and development of techniques did follow the Portuguese and Spanish expansion in the Atlantic. In the 15th and 16th centuries whale use migrated from the Portuguese shores in Iberia to the Atlantic Islands and to the overseas territories, particularly to Brazil. In the early 17th century the activity became established in Brazil and the Iberian crown started a shore whaling business there with a Basque crew hired for the first seasons. The beginning of whaling in these regions was mostly supported upon Basque expertise. For the next centuries, a structured shore based whaling enterprise developed in the coastal waters of Brazil, mainly dedicated to the hunting of right whales. After depletion of this species the whalers turned to humpback whales. Based on historical descriptions from the 13th to the 18th centuries, our investigation addresses the available information about the techniques used, the species exploited and the transfer of an activity across different Atlantic regions. Basques and Portuguese whalers played a significant role in the transfer of knowledge and techniques of whaling across the Atlantic in the early modern period.

Presentation type: Poster

Change in Nonlinear Dynamics and Spatial Structure of Coastal Socio-Ecological Systems: The Bay of Fundy as Case Study.”

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Much of traditional historical ecology research focuses on declines in species abundance and distribution. However, the influence of people can impact ecosystems in other ways, undermining system resilience and increasing the likelihood of sudden and unexpected system change. Here, research focused on anthropogenic impacts on ecosystem structure and function at varying spatial scales. Investigations combined qualitative narratives, novel empirical dynamics modeling, and historical data (circa 1870-1920) to expand knowledge on ecosystem dynamics, spatial structure, and resilience for the Bay of Fundy. Findings suggest the previous Bay ecosystem was highly nonlinear and locally diverse, yet interconnected with local substocks and potential subsystems. This structure may have been critical for population persistence and system resilience through decades to centuries of human use. Finally, we argue that human pressure that overwhelmed system structure, in addition to overfishing of a critical forage base, that ultimately degraded resilience in the Bay, resulting in its current state. These findings expand our understanding of human influence through time beyond numbers of fish removed to the altering of structure and dynamics, providing characteristics of past and potentially future ecosystem resilience.

Presentation type: Oral

Climate-induced changes in the Barents and White Sea ecosystems during the 18-20th centuries

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Barents and White seas is a northeastern boundary of distribution range for many boreal Atlantic species. Thus this region represents a convenient model for studying climate effects on ecosystems. In this study we summarize abundant historical information on changes of distribution range and population abundance of species from various groups during the 18-20th centuries. In cold periods unusual appearance of arctic mammals (white whale, harp seal) along the Barents Sea coast was repeatedly reported. Also, in warm periods, in particular, in 1930s, boreal pelagic fish and invertebrate species were moving with warm currents into the Barents Sea significantly shifting their range and some of them entered the White Sea. In the White Sea the climate influences abundance of stickleback, one of the key species of the sea. Therefore historical data show significant changes in composition and abundance of all components of biota in the Barents and White Sea in periods with pronounced temperature changes. These data can be useful for environmental policy in the current period of drastic increase of temperature in the Arctic area.

Presentation type: Oral

Historical ecology of sharks – Reconstructing population changes, ecosystem consequences and societal values

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Sharks have inhabited the ocean for >400 million years and influenced people for millennia. Yet they have left fewer traces than many other large marine vertebrates due to their lower preservation and lesser commercial value. However, sharks have been respected by ancient people, feared throughout history, intentionally killed, unintentionally by-caught, recreationally fished and commercially finned, leaving various records to study their history. Recently, sharks have regained our respect as they are increasingly valued as charismatic species, endangered wildlife, important top-predators in marine ecosystems and assets for dive tourism. Here, I trace the history of human interactions with sharks by reviewing records from the fossil and archaeological record, oral and written history, and fisheries and ecological data. I aim to reconstruct changes in shark populations over time and around the world, and evaluate the consequences of these changes for other species, marine ecosystems and human societies. Like with wolves on land, it shows the strong effect our changing values have on marine species and resources over time, and how to shift them towards protection and conservation.

Presentation type: Oral

Long-lasting human and climate impact on the seal populations in the Baltic by the archaeological and ethnohistorical evidence

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Humans and seals have a long and varied history of interactions across the Baltic Sea, and the cultural values placed on seals has changed dramatically over time. For early settlers in many regions, seals formed a crucial part of human survival and were valued for the meat and skins that hunting them provided. But today many see them as enemies of fishermen who compete for the same food, or opposite, as lovely and cute animals who have more rights to eat fish in the sea since "human food comes from the shop". Seal populations in the Baltic are affected by the changing climate, especially by the winter ice conditions, but also by the changing salinity in the Baltic, which in turn causes changes in their food composition. Seals also exhibit age specific behavior and the distribution and abundance of particular age groups in specific locations. By combining knowledge on the social behavior of specific seal species with data from large archaeo-zoological seal bone assemblages and/or ethnohistorical collections it is possible to obtain demographic profiles, although crude ones, on the hunted seals and thereby gain information on prehistoric/historical seal hunting strategies as well as seasonal exploitation patterns and hunting methods. Furthermore, relative frequencies of various seal species seen in a diachronic perspective provide information on impact from environmental and climatic factors on seal as well as human populations. Anthropogenic effects on seal populations during the last millennia and last century will be discussed, such as hunting, human exploitation of seal habitats and environmental influence.

Presentation type: Oral

Ecological hypotheses of a historical stock dynamic of Flounder (*Platichthys flesus*) in the Baltic Sea.

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Current trends in management of marine ecosystem need more than fisheries assessments of the main commercial fish species and need to be interpreted against understanding of magnitude and drivers of past changes. That's why we are flounder as a one of missing component at the holistic view for Baltic sea ecosystem. The aim of this was is i) perform the reconstruction of the biomass dynamics of the Baltic Sea flounder; ii) and understand it in the light of environmental conditions. To achieve this, the historical catch data and environmental conditions characteristics were compiled and analysed. Results showed that the increase of biomass (1920s) is observed just after high salinity period and rapid decrease in flounder's biomass was caused mainly by extremely high catch during so called "stagnation period" at 1930s - which most probably effected weak recruitment. Both of these factors: high catch level and low salinity might contribute to reduce reproductive capacity of flounder stocks. According to our models the biomass of flounder started to rebuild after ca. 20 years. At current work we discuss main driving forces for flounder stock at the Baltic in broader perspective.

Presentation type: Oral

Large, isolated, late settled islands: potential tests of human impacts on coastal marine ecosystem

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A problem in identifying the scale of human impacts on marine ecosystems over long time periods (1-10s of millennia) is they have co-occurred with major shifts in climate. As there are no large modern coastal marine ecosystems unaffected by human activity, to clarify the effects of humans we need to identify landmasses and adjacent marine ecosystems where humans are known to have settled relatively recently, the land and marine ecosystems are isolated from other areas inhabited by humans, human induced changes to the adjacent terrestrial ecosystem that have consequences for coastal seas are known, there is access to sufficiently detailed archaeological, historical and contemporary data sources on the state of the marine ecosystem, the climate variation over the period of human occupation is modest and well described, the non-climate physical drivers of environmental change are well described and the timing and magnitude of major removals from the marine ecosystem are known. Here four isolated, large candidate island systems, two in the Atlantic, one in the Indian and one in the Pacific Oceans are assessed against these criteria and the data available for one island group, Aotearoa/New Zealand, discussed in detail. The hypotheses regarding human impacts on marine ecosystems that can be tested using such a system are described and some objections to conducting historical ecosystem studies explored.

Presentation type: Oral

Historical evidence opens new swordfish recovery perspectives in the northwest Atlantic

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Swordfish populations in the north Atlantic are considered to be at sustainable biomass levels. However, using historical documentation from ca. 80-130 years ago, we show that three population properties (local abundance, spatial range, mean size of captured individuals) are lower today than they were historically. Our observations suggest that north Atlantic swordfish have not yet recovered to previous population conditions, ecological status and functional roles. Contrasting perceptions are due to two factors. First, the period of data (1950 to the present) used by the regional management agency to determine status begins after major changes in population properties had already occurred. Secondly aggregation of fishery and landings data over large spatial scales obscures local declines. Our historical analysis showed that exploitation was sufficient to have depleted local swordfish populations along the New England and Nova Scotia coast and suggest that modern distribution patterns are an artifact of that event. Re-occupation of coastal habitats at previous biomass levels would benefit the swordfish population, help re-structure food webs into more stable configurations and promote more economical fisheries. Implementing swordfish-specific and ecosystem-oriented management measures could facilitate full recovery.

Presentation type: Oral

Long term shift in inshore fish communities before and after the collapse of Atlantic cod

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The collapse of the northwest Atlantic cod (*Gadus morhua*) stocks in the early 1990s led to widespread ecological changes offshore. Ecological changes in inshore fish communities are less known. This is largely due to the lack of historical records and long-term, standardized research surveys in inshore water. We aimed to overcome these challenges with a unique dataset known as the Fleming survey. From 1959-1964, a systematic beach seine survey was conducted in 56 inshore bays along the east coast of Newfoundland to examine juvenile cod abundance. In addition to cod, all other fish collected in the seines were recorded. These surveys were repeated from 1992-1996 after the collapse of cod stocks, and documented substantial reduction in a dominant inshore species - juvenile cod. We show that total fish abundance declined with the decrease of cod, while several other species increased in abundance. This led to changes in the species composition between the 1960s and 1990s. Moreover, there was an increase in Shannon's diversity and species richness that may be related to the decline of cod. This study is the first to report long term change in inshore fish communities after the collapse of a formerly dominant commercial fish species.

Presentation type: Oral

Idiosyncrasy and Fisheries Science Objectives: A Marine Science Coup d'état in 1908

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This paper tells the story of how noble marine science objectives can often be entangled with high politics, patriotic adversary and sheer personal disagreement. In 1903, marine scientist, C. G. Joh Petersen commenced a 5 year series of investigations into the life history of the commercially important fish species around the Faroes and Iceland, hiring young botanist, Johannes Schmidt as expedition leader. This research program was part of the newly established *International Council for the Exploration of the Sea* (ICES) where Petersen chaired the Danish component, *Kommissionen for Havundersøgelser*. As the first 5-year term of ICES ended in 1908, Denmark's position was in a watershed. Petersen found that the North Atlantic cruises had fulfilled their purpose and tried to cut most of the government funding. He also dreamt of merging his own Biologisk Station with the Danish Kommissionen for Havundersøgelser into one strong research unit. These moves alienated Petersen from virtually all collaborators who instigated a revolt. Schmidt clearly leaned towards the winning rebellious side, which ousted Petersen from both ICES and the Danish commission. This 1908 coup d'état brought to the table a whole array of different marine science objectives, with great consequences for research and policy.

Presentation type: Oral

The three big “experiments” in the northern Adriatic sea: ecological lessons and management implications of the fishing interruptions determined by three twentieth century wars

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In the twentieth century three wars determined the interruption of fishing activities in the northern Adriatic Sea, namely World War I (1915-1918), World War II (1939-1945) and the Kosovo War (1999). From an historical ecology perspective, these dramatic events represent large-scale ecological experiments, since they caused the release of the main anthropogenic pressure affecting the Adriatic ecosystem: fishing. Building on the past studies carried out by Umberto D’Ancona and Vito Volterra, we collected and integrated historical data, official landing statistics, fish market data, fishery independent data, grey literature and fishermen ecological knowledge, reconstructing historical baselines and trends in fisheries resources. Our analysis was based on the use of ecosystem indicators, functional groups and selected species, and was focussed on the investigation of the recovery potential of fisheries resources. All three fishing interruptions showed to trigger the recovery of the system, even when the event lasted only five months and happened in the context of an already degraded ecosystem, as in the case of the Kosovo War. This result informs and challenges the current Italian fisheries management, where a summer fishing ban lasting only one month does not show the same effects on all the species targeted by Adriatic trawl fishery.

Presentation type: Poster

Suggestions for the Sovereign: Fisheries Advice from the Age of Inexhaustibility, 1604 to 1914

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We live in an era of dueling prescriptions for restoring ocean ecosystems and reversing the decline of marine animal populations. Advocates of closed areas question the motives of those endorsing market-based solutions, and proponents of historically-based restoration are described as engaging in "fishful thinking". Industry participants distrust all expert advice and urge managers to just let them fish. To avoid a 'shifting baseline' in our expectations of consensus, an historical analysis of lawmaking for North Sea herring stocks shows sovereigns have often received conflicting advice. Luminaries whose advice has been followed or disregarded include Hugo Grotius, Adam Smith, and Thomas H. Huxley. Kings, parliaments, and commissioners have managed to steer a course toward policies that best suited their times if not the theories of their experts or the biological diversity of the marine ecosystems under their care.

Presentation type: Oral

The evolution of bottom trawling impact on demersal fish populations and the benthic ecosystem

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Benthic ecosystems provide important goods and services, such as fisheries products and supporting, regulation and cultural services. There is serious concern about the adverse impact of fisheries, in particular bottom trawling, on benthic ecosystems. The impact of bottom trawling is determined by the type of fishing gear used and the sensitivity of the sea bed habitat and benthic ecosystem. Here we reconstruct the historic development in intensity and spatial extend of bottom trawling based on a variety of data sources (archaeological, historical, fisheries technological, geological, fisheries), with particular focus on the North Sea. Although pelagic species such as herring and predatory fish species such as cod, ling and haddock were targeted with passive gear since the start of the 2nd millennium, the use of active gears was constrained by the available technology to shallow waters and smooth sea bed habitats. Since the 19th century, bottom trawling gradually spread out over the entire North Sea. In the beginning bottom trawling was mainly restricted to sea bed habitats with a soft sediments, but as steam was replacing wind and hand power, heavier gear became available allowing trawlers to move into previously untrawlable grounds. Based on the sea bed characteristics and state of the trawling technology the evolution of the trawling footprint in the North Sea is estimated.

Presentation type: Oral

Fishery in the Gydanskiy bay (Arctic Siberia): sustainability in the past

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Gydanskiy bay connected to the Kara sea - is one of the coldest places on the planet, where there is an industrial fishing. Annual catch here is 300-500 tons of whitefish, burbot, arctic cisco. Historical statistics of the catch dates back to the 30-ies of XX century, when began serious development of this region by the Russians. Aboriginal population (Nenets) was not literate, so early data fields are missing. For the next 80 years, the local fishery has undergone dramatic change of work organization, technological revolution. Short fishing period (July-October), the impossibility of long-term preservation of the catch, served as a mechanism to maintain the stability of the fish resource in the XX century. However, in the last decade, local fisheries showed signs of instability. The cause of the imbalance - is changing the traditional life of aboriginal people, local pollution, the increase of the field period without ice. Created State Reservation "Gydanskiy" "defended" the prohibition of catching a large population of cisco and increased unemployment of the nenets. Obviously, the fishing in the Gydanskiy Bay is a classic example of social-ecological systems, that requires a new policy in the management, taking into account social factors.

Presentation type: Poster

Fishermen Speak: Sea Fishing and Ecological Awareness in the United Kingdom, 1860-1914

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This paper studies attitudes and practices of sea fishing in the United Kingdom during the second half of the nineteenth century. Using text-mining with the British Parliamentary Papers, it examines the views of MPs, scientific experts, and hundreds of fishermen who testified before a series of parliamentary commissions from 1866 to 1908. Using GIS, it maps witness estimates of fish stocks for fishing grounds in the Irish Sea, the North Atlantic, and the North Sea. As the size of catches and numbers of fresh fish arriving for sale in London and other urban markets increased steeply, questions arose about the limits of fish stocks. At the 1883 International Congress on Fishing, the scientist Thomas Huxley repeated his claim that the sea was a nearly inexhaustible source of food. Nonetheless, a growing number of skeptics and marine specialists began to challenge this claim. Of particular importance in this paper are the opinions of fishermen who testified before the Royal Commissions of 1866, 1886, 1893, and 1908, and who expressed a more realistic view of fish stocks than did the eminent scientist. In this way, fishermen, who knew marine life through experience and labor, helped bring about the recognition of ecological limits in sea fishing.

Presentation type: Oral

Fish is woman's business to – looking at marine resource use through a gender lens

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The majority of studies in fisheries history have turned a blind eye on the role of women. This is mainly a result of the roles that most societies have traditionally allocated to men and women, with men being regarded as providers, while women are thought to be responsible for home and family. It also results from a narrow understanding of fishing as the catching of organisms with certain gears, for example lines, nets and spears. Activities such as the collection of shellfish and other organisms – often carried out by women – have rarely been considered as fishing. However, women have always had a major influence on fishing practices and fish trade: as harvesters and collectors of marine resources, as processors and traders, and as central actors in informal networks that are especially relevant for small-scale fisheries. This presentation analyses gendered processes in fisheries, by shedding light on the manifold roles of women, in order to complement and challenge the results of historical fisheries research. It reviews studies on fisheries, gender and history, and provides a systematic overview on important aspects pertaining to women's role in fisheries.

Presentation type: Oral

“So Wide a Chase:” modelling the ecological consequences of whaling in two oceans

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Whale populations worldwide have been severely depleted by commercial whaling, with ecological consequences that are still debated. This study combined historical abundance reconstruction with ecosystem modelling to investigate the changing trophic roles of baleen whales in the Northeast Pacific and Southern Oceans. Unexploited whale abundance in each region was reconstructed using surplus production models and input into Ecopath mass-balance food web models. Trophic effects of whale depletion and recovery were examined using historical and current Ecopath models and time-dynamic Ecosim simulations. Historical reconstructions and Ecopath models revealed large changes in the absolute and relative abundances and prey demands of baleen whale species in both regions. In the Northeast Pacific, Ecosim simulations suggested that whale recovery could slightly reduce herring biomass via modest top-down effects. In the Southern Ocean, they confirmed the plausibility of a modest, transient increase in krill biomass due to relaxed top-down control following whale depletion. However, this effect was apparently eliminated between 1975 and 1990 due to bottom-up forcing or the breakdown of the “whale pump.” These results demonstrate the important position once occupied by baleen whales in two marine food webs, as well as the utility of linking population and ecosystem models in historical marine ecology.

Presentation type: Oral

Dealing with awkward data: using historical media to uncover changes in a popular recreational fishery.

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Historical datasets are vital in improving our understanding of long-term change, but our ability to accurately interpret historical sources can be obstructed by small sample size, unknown biases, and missing information. Digitization is making many popular media sources, such as newspapers, readily available for large-scale analysis for the first time, but data derived from popular media sources may be particularly prone to the above issues. Snapper (*Pagrus auratus*) has been a socially and economically important fishery in Australia for over a century, but little ‘official’ information exists on its recreational fisheries. Historical newspapers have been found to be a valuable source of information for such fisheries, but previous research has been restricted to the state or local level. This paper uses popular media in addition to available scientific data and government reports to explore historical changes in snapper fisheries across multiple jurisdictions along the east and south coasts of Australia. From these sources we extract data to inform early catches and catch rates, using principled approaches to quantify biases and to close data gaps. We aim to highlight the changes that have occurred to snapper fisheries across Australia, as well as the opportunities interdisciplinary approaches hold for interpreting historical data.

Presentation type: Oral

ICES WGHIST: Integrating historical ecology into management and policy

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The ICES Working Group on the History of Fish and Fisheries (WGHIST) brings together fisheries scientists, marine biologists, historians and historical ecologists to improve our understanding of long-term marine ecosystem dynamics. These results are used to set baselines for the management and conservation of fisheries resources and marine ecosystems. In 2015, WGHIST begins a new 3-year cycle, with the first meeting scheduled for October. These meetings will focus on tangible benefits of marine historical ecology to current marine policy and management. Case studies from both sides of the Atlantic and elsewhere will demonstrate the potential for integration and application of non-traditional methodologies and data sources to management. To maximise dissemination of research results, policy makers and managers will be invited to take part in and directly contribute to WGHIST. WGHIST will also work closely with the Oceans Past Initiative to ensure that our questions complement and add to the broader agenda of Oceans Past. At the conference we will discuss plans for this next phase of WGHIST and how our objectives contribute to and complement Oceans Past. We will also encourage participants to engage with us and take part in the exciting opportunities posed by this forum.

Presentation type: Oral

Human impact on Central Baltic Sea fish stocks and ecosystem during the 20th Century – preliminary modelling results

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The Baltic Sea ecosystem has undergone large changes in the 20th century, related to large-scale changes in human pressures and climate variability. In the early decades of the 1900s, at the Baltic Sea large seal populations were present, fishing mortality was relatively low, and the system was less productive. Subsequent developments in fishing technology, intensive hunting of seals and increased nutrient inputs into the Baltic led to large-scale changes in Baltic ecosystem structure and dynamics. The information on long-term changes in fleet structure, effort, catches, species abundances, and interactions varies in quality and depends on the length of the time-series. To reflect long-term changes in primary production unique reconstruction based on BALTSEM model was used. In this paper we compile and model the available historical information on biomasses, diet composition, productivity changes, and fisheries into time-dynamic model (Ecosim) for recent period. Based on this information we explore the possible structure and energy flows in the Baltic ecosystem at different time-periods during the 20th century and contrast these with changes in human impacts.

Presentation type: Poster

Ecosystem dynamic and shifts in the Central Baltic Sea during the 20th Century

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The Baltic Sea ecosystem has undergone large changes in the 20th century, related to large-scale changes in human pressures and climate variability, which have caused regime-shifts and alternative ecosystem states. Since the early decades of the 1900s the Baltic Sea has changed its state from an ecosystem with high seals population, low fishing mortality and low primary production to an overfished and eutrophicated system with low seals biomass. To reflect the long-term changes in ecosystem development, a reconstruction of hydrology and biogeochemistry by the BALTSEM model was combined with information on long-term changes in catches and species abundances. In this paper we compile and analyse the available historical information in integrated trend assessment framework. Based on this information we describe Baltic ecosystem states at different time-periods during the 20th century and discuss in light of current management.

Presentation type: Oral

A North Atlantic Geographical Information System (GIS): Mapping Social Coasts over Time and Space

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A North Atlantic Geographical Information System (GIS): Mapping Social Coasts over Time and Space: The maritime world of the North Atlantic is documented by a wealth of archival, cartographic and archaeological data. We propose to use these rich resources to explore the historical and social dimensions of ports and coastal communities by means of a new funded network of scholars on both sides of the Atlantic associated with the Oceans Past Platform (COST ACTION 2014). We will present a methodological template upon which to extrapolate and transpose current and commensurate twentieth century data sets in a GIS to visualize and analyze the cultural morphologies of North Atlantic social coasts over time and space. Drawing on social, historical and humanities GIS approaches, this paper will discuss the potential of integrating current and historical quantitative demographic and economic data in GIS with qualitative place-based analysis techniques, to explore coastal senses of place shaped by historical contingencies, social flows and vulnerabilities and maritime culture. Our paper will discuss the potential for creating a Historical North Atlantic GIS building on contemporary port and coastal data integrated with historical data to ask wider questions on the adaptation and resilience of its coastal communities over the last 500 years.

Presentation type: Oral

Adaptation Options for Coastal Communities: an Australian case study

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Since the late 20th Century Australia's coastal communities, many of which have a history of dependence on commercial fishing, have been forced by environmental pressures, including climate change, to re-orientate to other activities such as marine tourism, aquaculture and non-marine industries. The ability of communities to adapt to climate change and other stressors depends on their natural, social, financial, human and physical assets or what can be collectively referred to as 'capitals'. One aim of this paper is to present a methodology that brings together all of these 'capitals' and enables coastal towns be scored on their vulnerability to climate change. The research draws on a variety of sources including vulnerability reports of fished species, census reports and scientific papers. An associated website makes this information readily accessible to communities wanting to plan for their futures. The paper also reports on an attempt to apply this approach in an *historical* context with a case study of the coastal community of Geraldton in Western Australia. It will be argued that the growing diversity and performance of Geraldton's economy, driven mainly by mining activity, and the quality of regional institutional and social capital, have combined to create adaptive capacity and resilience to change.

Presentation type: Oral

Women on board: 20th century Estonian ocean fishing narratives

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Gender issues in ocean resource management have received relatively little scholarly attention so far. In research focusing on ocean ecosystems or trade issues, gender may not be a research question of primary importance. However, it is necessary to point out that the history of maritime resource exploitation is not merely a men's business. In addition to the multi-species' ethnography that has recently been applied in ocean research (e.g. Helmreich 2009), the complex gender relations within our own species are also worthwhile to be explored. As ecofeminist writers (see Ortner 1972) have pointed out, the patterns of oppression and exploitation tend to repeat themselves, be the question about one gender dominating over another or about one species dominating over the rest. In the presentation I will focus on the position of women on the board of ocean fishing vessels. My source material comes from Estonian ocean fishing narratives of the 20th century (Tammlaan, Smuul, Kermik, Tuulik). The questions asked include: in what light have the women on board of fishing vessels been depicted? Why were women taken along to long, harsh and physically demanding voyages? What were their tasks? How was their work ranked in the context of vessel crew hierarchy?

Presentation type: Oral

Notes on the environmental history of the Brazilian manatees: perceptions of the early modern Portuguese settlers

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The relation between humans and manatees dates back to prehistoric times and is still subject on interdisciplinary disciplines as marine environmental history, ethnozoology and anthropology, among others. In Brazil, manatees species (*T. Inunguis* and *T. manatus*) are part of local cultures and traditions and were estimated to be in the tens of thousands when the Europeans first arrived. The novelty and strangeness of this New World creature along with its slow moving and the uses of its meat, blubber and leather had placed it on earlier in literature, folklore and mythology but had also led to the dwindling of its populations. We collected information from travel literature books, letters from missionaries and Portuguese explorers, chronicles, scientific treaties, illustrated broadsheets, leaflets and images in naturalist records, sailors' reports, folklore sources and literature. Our main goal was to frame and discuss the first references and the human perception towards Brazilian manatees, in order to extract biological information that can allow us to find novel information on pristine populations and on species occurrence. This information can further be used as an indicator of past biodiversity, enabling the study of baseline levels and changes in manatees presence from the past to the present.

Presentation type: Poster