Fish For The Future

How can we make a fantastic fish pie?

Collaborative Curriculum KS2

Introduction

About the unit

In this unit pupils design and make a fish pie to a mystery specification. In order to meet this challenge they draw on their learning to make an informed decision about their design and making process. Through the unit pupils learn how to identify different species of fish and where they can be found in the environment. They find out about the net to plate process, including when fish are in season, how fish are caught and what happens to the catch when it is landed. Pupils learn about how their choices impact on the world around them, and the importance of the fishing industry to local communities.

Where the unit fits in

Subject Area		Breadth of Study
English	EN1 Speaking and Listening	9a live talks
		10a-c Group discussion and interaction
	EN3 Writing	9b to inform and explain, focusing on the subject matter and how to convey it
		in sufficient detail for the reader
	The range for writing should include:	12 explanations, opinions, instructions
Maths	During the KS pupils should be	1d applying their measuring skills in a range of contexts
	taught knowledge and understanding through:	
		1f exploring and using a variety of resources and materials, including ICT
		1h using mathematics in their work in other subjects
Science		1a a range of domestic and environmental contexts that are familiar and of
		interest to them
		1c using a range of sources of information and data, including ICT based
	Communication	2a use appropriate scientific language and terms to communicate ideas and
		explain the behaviour of living things, materials, phenomena and processes
Design and Technology	DMC attainment target focus	Communicating ideas
	DMC attainment target focus	Making quality products
ICT		5b working with others to explore a variety of information sources and ICT tools
History		This unit could be linked to a Local History Study 7 like Comings and Goings;
		Mounts Bay which provides an historical introduction to fishing
Geography		6e an environmental issue, caused by change in an environment and
		attempts to manage the environment sustainably
		7a study at a range of scales- local, regional and national
		7c carry out fieldwork investigations outside the classroom
Citizenship		5e meet and talk with people

Prior learning

It would be useful if pupils are familiar with

- mapping vocabulary and techniques
- hygienic food preparation methods
- a local fishing port

Vocabulary

In this unit, children will have opportunities to use words related to: fish species:

- pelagic, shellfish, flat fish, crustaceans sea habitats:
- inshore, deep sea,

tidal the environment:

- sustainability, over-fishing, conservation the fishing industry:
- trawler, net, catch



Fish For The Future

Expectations at the end of this unit

most children will:

know that there are a variety of fish which are eaten and are popular among consumers; use data-handling skills to present their findings; group foods according to their nutrition type; estimate the weight of and accurately weigh fish; identify some groups within fish species, the habitats in which they live and key features of a life cycle of a fish; know some of the changes that have occurred in the fishing industry; suggest ways in which fishermen might protect the environment and their fisheries for the future; identify on maps the location of fishing harbours in their locality, other places in the world and the interdependencies between places; test and evaluate existing products, design and prototype their ideas before making a fish pie to a specification; observe hygiene guidelines; produce a piece of instructional writing using recipe conventions and layout

some children will not have made so much progress and will:

know that we eat a variety of fish; ask others questions and collect their answers; estimate weights and distances; name some fish species; identify a difference in the way fish was caught in the past to methods today; that fish have a life cycle like us; select some ingredients for their fish pie design; participate in making a fish pie

Collaborative Curriculum KS2

some children will have progressed further and will:

interpret survey results to identify why some fish are more popular than others; develop questions and a path of enquiry to investigate and prepare for their challenge; test and evaluate existing products; taste and group fish according to flavour; consider the merits of a meal against the requirements of a balanced diet; recognise the importance of nutrition and hygiene; identify several species and groups of fish; use accurate measurements to calculate the cost of fish; identify the life processes and environments of more than one species; consider changes in the fish industry and the impact of methods on the environment and landscape; consider the impact of protecting the environment against the consequences of safeguarding the fisheries; use maps and atlases to calculate food miles; draw on their learning to make informed decisions about their product design according to a specification, plan test and evaluate their design throughout the process; communicate the making process and desirability of the final product through instructional and promotional written outcomes

Resources

Activities

A01 Taste Test

A02 Fish Trumps

A03 Catching Games

A04 My Fish My Property

Texts

T01 Company Pie Plans

T02 Fish Flavours

T03 Food Groups

T04 Identifying Fish

T05a Trump Cards Front

T05b Trump Cards Reverse

T05c Trump Information

T06 Salmon Stages

T07 Cornish Waters

T08 Visiting Fishermen

T09 Hevva Hevva

T10 Catching Information

T11 Catch Yield

T12 SciArt Workshop

T13 Seasonality

T14 Harbour Anagram Cards

T15 Ports of Registration

T16 Port League Table

T17 Working Harbours

T18 Visiting Newlyn

T19 Net to Plate

T20 Fish Destinations

T21 Tom Bawcock

T22 World Fish Dishes

T23 Pie Design

T24 Pie Types

T25 Pie Preparation

T26 Chef's Favourite

T27 Example Recipe

Pictures

P01 Fish Anatomy

P02a-u Caught Fish

P03 Ocean Cross Section

P04a-z Fish Species

P05 Mackerel Life Cycle

P06a-m Tamar Salmon

P07 Mussel Beds

P09a-f Sardine Fishing

P10a-p Catch Methods

P11a-d Oyster Fishing

P12a-i Boats

P13a-h Harbours Past

P14a-h Harbours Today

P15 Starry Gazey Pie

Audio-visual

AV01 Fish Eaters AV02 Downderry Bill **AV03 Cornish Nets**

AV04 Bracken's Boats

AV05 Fishing Gear

AV06 Fish Quota

AV07 Spider Crabs

AV08 Fishy People

AV09 Bawcock Song

AV10 Fish Pie Demonstration

- MA4.1a select and use data handling skills when solving problems in other areas of the curriculum
- MA4.1f decide how best to organise and present findings
- MA4.1g use the precise mathematical language and vocabulary for handling data
- MA4.2c represent and interpret data using graphs and diagrams
- MA4.2f draw conclusions from statistics and graphs and recognise when information is presented in a misleading way; explore doubt and certainty and develop an understanding of probability through classroom situations

Possible teaching activities

Who eats fish?

Create and display taster bowls containing a range of familiar and unfamiliar foods. Give each pupil chance to take a sample from a bowl of their choice. As a class, create a bar chart of pupil choices. Ask pupils; why were some foods more popular than others? Show pupils AV01 Fish Eaters. Challenge pupils to find out what fish people do/don't eat and why. Work with the class to develop some simple survey questions that they can ask people for homework such as; which fish do you eat the most often? How often do you eat fish? What is the main reason for not eating fish more often? What is your least favourite fish? Encourage pupils to practise asking their questions with a partner and collect pupil ideas about good survey techniques e.g. be polite, explain what and why you are trying to find out, speak clearly, record quickly and accurately and thank people for their time. Ask pupils to carry out their survey for homework. As a class, decide how to present findings for closed and open questions. Split the class into groups to collate the data for different findings and ask groups to present their findings to the rest of the class. Challenge pupils to design a fantastic fish pie that they think would appeal to most of the people that they surveyed. Ask pupils; what will we need to know in order to choose our fish pie ingredients? As a class, identify the main steps in achieving the fish pie challenge e.g. research. Split the class into groups and ask each group to think of investigation guestions for each different step. Collect group ideas and create a 'Class Pie Plan' like T01 **Company Pie Plans**. Explain to pupils that they are beginning the research phase of the plan. Split the class into groups. Reveal to the class that each group will be making a fish pie but that each group will be given a different fish pie specification. Give pupils time to speculate about the types of fish pie they might be asked to design and make e.g. healthy, luxury, budget, locally sourced, sustainable, traditional, exotic. Explain to groups that they must find out as much as they can in order to prepare themselves for the challenge; to make a fish pie to a mystery specification which will be revealed later in the unit

Learning outcomes:

children

- design and carry out a survey of popular fish foods
- devise investigation questions for the challenge

Points to note

Contact Sarah
Crosbie at
Seafood Cornwall
Training for help
in preparing for
and organising
your visits to
Cornish Fishing
Ports and visitors
during this unit.
Tel:01736
364324
www.seafoodcor
nwalltraining.co.
uk

- DT use information gained from investigating familiar items to develop a specification for a 'new' product
- DT test products in use for quality and function
- DT investigate foods to understand their properties
- DT nutrition; foods for energy, growth and protection
- SC2.2b about the need for food for activity and growth, and about the importance of an adequate diet
- Cit3a what makes a healthy lifestyle, including the benefits of exercise and healthy eating, what effects mental health and how to make informed choices

Possible teaching activities

Is fish good for us?

Invite a chef or cook from the school canteen to provide pupils with a chance to taste a selection of fish pies e.g. home made and ready meals such as budget range, healthy range and luxury range. As a class, decide on categories for judging the fish pies including aesthetics, flavour and texture. Record fish pie scores. Give pupils the packaging or recipe for each pie and challenge pupils to match them to the correct pie. Ask pupils; was the most expensive voted the best? Which one had the most fish in it? Use A01 Taste Test and T02 Fish Flavours to help the class group fish according to their flavour. Challenge pupils to make a class list of qualities for a good fish pie e.g. fresh, mixture of textures, colours and flavours. Ask pupils; what fish could you put in your fish pie? Are all fish edible?

Create a table like **T03 Food Groups**. Help pupils add fish to the table. Encourage pupils to add other fish pie ingredients to the table based on one of the fish pies that they have tasted. Ask pupils; what could you serve with a fish pie to create a balanced meal? What parts of your body will the fish pie be good for?

Learning outcomes:

children

- participate in fish pie and fish tasting activities
- create a checklist of quality for a good fish pie
- complete a table of the food groups contained in a fish pie

- SC2e that humans and some other animals have skeletons and muscles to support and protect their bodies and to help them move
- MA3.4a recognise
 the need for stand ard units of length,
 mass and capacity,
 choose which ones
 are suitable for a
 task, and use them
 to make sensible es timates; convert one
 metric unit to an other; know the
 rough metric equival ents of imperial units
 still in use
- MA3.4b recognise that measure is approximate; choose and use suitable measuring instruments for a task; interpret numbers and read scales with increasing accuracy; record measurements using decimal notation

Possible teaching activities

Is fish expensive?

order to show pupils a variety of fresh fish species. Alternatively visit your local fishmonger with the class. Ask the visitor to help pupils to identify the features of different species, their differences and similarities. Give pupils time to ask questions about the different species. If a visitor isn't available, help pupils identify the main features of a fish using P01 Fish Anatomy. Use T04 Identifying Fish and P02 Caught Fish to introduce pupils to some widely available specimens of fresh fish. Give pupils a set of cards with each card featuring the current price of the fish per pound/kilogram and challenge pupils to guess the cost by placing a card next to the correct fish. Reveal the correct prices. Give pupils another set of cards, this time with the total price of each whole fish displayed. Challenge pupils to match each card to the correct fish by estimating the weight of the fish. Help pupils to observe hygiene guidelines and check their guesses by weighing each fish on a set of scales. Once pupils have recorded the weight of the fish they can use the first set of cards to help them calculate the total price of each fish. Ask pupils; which is the most expensive fish in the room? Which is the cheapest? What is the average price of fish per pound/kilogram? Is fish expensive compared to other food? Challenge pupils to carry out a price comparison for homework comparing the average price of fish to another food of their choice e.g. chicken, cheddar cheese, lamb.

Invite either a fisherman or fishmonger to visit the classroom in

Learning outcomes:

children

- guess the price of fish
- estimate the weight of a fish
- weigh fish to ascertain price
- research the cost of another food product

- SC1a that the life processes common to humans and other animals include nutrition, movement. growth and reproduction
- SC1c to make links between life processes in familiar plants and animals and the environments in which they are found
- SC2.4b how locally occurring animals can be identified and assigned to groups
- SC2.5b about the different animals found in different habitats

Possible teaching activities

Where does fish come from?

Play A02 Fish Trumps using T05a Trump Cards Front, T05b Trump Cards Reverse and T05c Trump Information. Ask pupils: what areas of the ocean did the top trumps fish live in? Can you remember? Collect pupils ideas and prepare an 'under the sea' display board using P03 Ocean Cross Section. Take a picture from P04 Fish Species and model placing it on the display board explaining why you think the fish would be found there e.g. on the seabed, near the shore, near the surface etc. Cut up and give out the rest of the pictures and challenge pupils to carefully place their fish pictures in the 'sea' (cross section display) and justify their location. Ask the rest of the class; would you put the fish on the seabed? Why? Why not? Encourage pupils to refer back to the Fish Trump Cards to check the accuracy of their choices. Look at the board and ask pupils can you spot any groups or families of fish? E.g. crustaceans. Show pupils P05 Mackerel Life Cycle. Ask pupils; are there any stages in the life cycle that you do/will share with the mackerel? What different areas of the ocean does a mackerel visit throughout its life? Look at the display with the class and ask; would the fish be swimming around together? Which ones would stay away from each other? Why? Are all fish found in the sea? Show pupils P06 Tamar Salmon. Challenge pupils to create a life cycle diagram for a salmon drawing on T06 Salmon Stages and the mackerel life cycle that they have seen. Ask pupils; are fish only found in the wild? Why might people farm fish? Show pupils P07 Mussel Beds. Challenge pupils to find out the name of another farmed fish species for their homework. Collect pupil findings and evidence.

Learning outcomes:

children

- participate in making an accurate display of the ocean and its inhabitants
- create a life cycle diagram for a salmon

Points to note

Further information about salmon is provided by the Westcountry Rivers Trust and can be found online at http://www.corn wallriversproject. org.uk/education /ed cd/fisheries/ salmonid.htm

- MA4.2b interpret tables, lists and charts
- Hist 4a how to find out about changes studied from an appropriate range of sources
- Geog4b recognise some physical and human processes and explain how these can cause changes in places and environments
- Geog 5b recognise how and why people may seek to manage environments sustainably
- DT know that product costs include time, people, equipment and materials
- Cit2j that resources can be allocated in different ways and that these economic choices affect individuals and communities and the sustainability of the environment
- SC2.5a about ways

Possible teaching activities

How are fish caught?

Ask pupils; what fish do you think are caught around the Cornish coast? Gather pupil ideas and create a list like T07 Cornish Waters. Put flags on the fish on the Ocean Cross Section display board that are caught in Cornish waters. Watch AV02 Downderry Bill. Ask pupils; do you know any fishermen? Invite a fisherman to talk to the class about their work using **T08 Visiting Fisherman**. Encourage pupils to prepare and ask questions. Play A03 Catching Games. Show pupils AV03 Cornish Nets. Ask pupils; are fish caught in the same way now as in the past? Why? Why not? How do we catch fish today? Take the class to participate in T09 Hevva **Hevva** workshop to find out more about the fishing industry in the past. Show pupils P09 Sardine Fishing. Ask pupils; what are the differences between fishing in the past and fishing nowadays? Watch AV04 Bracken's Boats and AV05 Fishing Gear. Show pupils P10 Catch Methods, using T10 Catching Information to support your own subject knowledge. Ask pupils to guess which methods catch the most fish before revealing the answer using T11 Catch Yield. Watch AV06 Fish Quota and ask pupils; can fishermen catch as much as they like? Play A04 My Fish My Property. Invite Dr Joanna Henley to lead the game or other activities like T12 SciArt Workshops. Watch AV07 Spider Crabs. Ask pupils; What happens if fishermen catch young species of fish or shellfish? What happens when fishermen catch the wrong kind of fish or mammals? Ask pupils; what else can fishermen do to help maintain fish stocks? Gather pupil ideas. Show pupils P11 Oyster Fishing and explain that the Oyster fishing on the River Fal is only permitted by boats under sail, restricting the amount that can be caught each season. Show pupils T13 Seasonality and ask pupils; does fishing happen all year round? Challenge pupils to create a list of currently available fish according to their season.

Learning outcomes:

children

- interview a visiting fisherman
- play games to explore both the methods and impact of catching fish
- create a list of currently available fish

Points to note

The seasonality of fish is shown in generalised tables but of course this does not account for bumper catches or changing variables and patterns. That affect, species, fishermen and the environment. A good year for one species may be a poor year for another.

Visit

www.seafish.org to find out when fish species are in season.

If your school is near the River Fal you may wish to invite an oyster fisherman to talk to the class, as carried out by St Mawes Primary School, AV07 Oyster Man in the Our Cornish Rivers unit of work.

in which living things and the environment need protection

- Geog2a to use appropriate geographical vocabulary
- Geog3b the location of places and environments
- Geog3e to identify how and why places change

Possible teaching activities

Where are our fish landed?

Show pupils P12 Boats and ask pupils; where are they from? What do the letters on the boat mean e.g. PZ? Divide the class into small groups, giving out group whiteboard and pens. Cut up and give out the 'words' in the left hand column of T14 Harbour Anagram Cards (don't give out the answers yet!). Challenge groups to unjumble to find the names of Cornish ports. Cut up the middle column and give out the boat codes. Challenge pupils to match their boat codes to their anagram words. Allow pupils to use a map to search for the correct names if they are finding it difficult. If there are still some unsolved anagrams, cut up and give out the port names. Give pupils time to match them to their anagram cards and boat codes. Eventually, display the answers one-by-one using T15 Ports of Registration to resolve any more that pupils have heard of. Show pupils T16 Port League Table and ask pupils; which port lands the most fish? Split the class into two groups. Give each pupil in one group a picture using P13 Harbours of the Past and each pupil from another group a picture using P14 Harbours Today. Challenge pupils to pair up with a pupil who has a picture of the same port. In their pairs, ask pupils to identify one similarity and one difference between each pair of pictures. Collect pupil findings and share them with the rest of the class. Take pupils to visit a working fishing harbour using T17 Working Harbours or T18 Visiting Newlyn if Newlyn is your harbour of choice.

Learning outcomes: children

- visit a harbour
- participate in a game, identifying Cornish fishing ports

- Geog 2c to use atlases and globes, maps and plans at a range of scales
- Geog3g to recognise how places fit within a wider geographical context and are interdependent
- MA3.4b recognise that measure is approximate

Possible teaching activities

How does fish get from net to plate? Remind the class of their visit to the port and ask pupils; what happens to the catch after it is landed? Show the class AV08 Fishy People. Carry out a mock fish auction in the classroom using real fish or crates filled with cut out images. Split the class into small groups. Cut up and give each group a set of T19 Net to Plate cards. Challenge groups of pupils to sequence the cards. Encourage groups to feedback, compare sequences and review their choices. Ask groups to write a caption for each picture in the sequence describing what is happening. Help each group to swap their set of captions with another group and match them to their images, guessing which picture they describe. Show pupils T20 Fish Destinations. Ask pupils; which country is the furthest away? Which are European countries? How many fish are exported? Display five different fish product packaging items e.g. prawns from China and challenge pupils to use a world map to calculate the rough distance each fish ingredient travelled to reach the school. Remind pupils how to use scale to work out rough distances on a map. Ask pupils; which product travelled the furthest? The shortest distance? How do you think they were transported? Would you put any of these ingredients in your fish pie? Why? Why not?

Learning outcomes:

children

- sequence events in the net to plate process
- calculate the food miles of a fish product

- EN1.1a choose form and content to suit a particular purpose
- EN1.2a plan
- EN1.2b draft
- DT prototype key parts of their ideas before making final decisions
- DT sequential drawings to show the progressive nature of an activity
- DT take account of people's reactions to aesthetic characteristics
- DT make a product for someone else taking into account their preferences and needs

Possible teaching activities

What shall we put in our fish pie?

Show pupils P15 Starry Gazey Pie and share T21 Tom Bawcock and AV10 Bawcock Song with the class. Share T22 World Fish **Dishes** and challenge pupils to identify the traditional Cornish recipes hidden amongst the more exotic dishes. Watch AV09 Fish Pie Demonstration with the class. As a class, reflect on the fish pie tasting experience to create a check list for a good fish pie using **T23 Pie Design**. Reveal to each group the specification for their fish pie design and make challenge e.g. healthy, luxury, budget, locally sourced, sustainable, traditional, exotic. Make sure that groups keep their 'mystery specification' hidden from the other groups. Give pupils time to plan and decide on the fish ingredients for their fish pie according to their specification. Help pupils consider the most suitable topping and sauce types for their fish pie using **T24 Pie Types**. Encourage pupils to think about their selection of individual ingredients according to their specification e.g. milk; cheapest? Full fat? Locally sourced? Packaging type? If necessary, help pupils taste spices or try combinations prior to decision making e.g. prototype sauces with different herbs. Ask pupils to create a simple storyboard of the making process. Challenge pupils to identify opportunities to feature hygiene procedures in the storyboard process and integrate new ideas. Help pupils to develop a final written recipe to plan the making of their fish pie using **T25 Pie Preparation**.

Learning outcomes:

children

- distinguish traditional local dishes from exotic dishes from other countries
- work together to devise and write a recipe for a fish pie according to a specification

Points to note

The Mousehole
Cat by Antonia
Barber and Nicola
Bayley is an illustrated story charting the adventures of Tom
Bawcock and his cat.

- EN3.1c use language and style that are appropriate to the reader
- EN3.1e use features of layout, presentation and organisation effectively
- EN3.2c-e revise, proofread and present
- ICT2a how to develop and refine ideas by bringing together, organising and reorganising text, tables, images and sound as appropriate
- DT work hygienically and economically
- DT understand the basic properties of working with foods
- DT talk and write about activities undertaken

Possible teaching activities

How can we make our fish pie?

Provide the ingredients for each of the fish pie recipes (local shops may sponsor or parents may provide). If possible, visit a secondary school and use their food technology rooms to enable groups to make their pies simultaneously and ask older students or parents to assist groups with cooking. Record each stage of the making process with digital cameras. Invite a local chef to join the class and share some of their favourite ways of cooking fish, like T26 Chef's Favourites, whilst the pies are cooking. Enjoy tasting the fish pies and encourage pupils to devise a way of recording which pies pass the taste test and why. Give each group time to guess the specification of each pie. Reveal the correct specification of the pies and award groups with points for guessing correctly. Create a class book of recipes with each recipe featuring a (persuasive) description of the finished product like T27 Example Recipe, step by step instructions, pictures of the process and a picture of the finished product. Send a copy of the successful recipes or completed recipe book to a relevant organisation or fish outlet to help promote and support the local fish industry.

Learning outcomes:

children

- participate in a cooking a fish pie
- record the making process
- revise and present their fish pie recipe with pictures

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Further information:

Collaborative Curriculum KS2

This unit was initially trialled at Constantine Primary School and Mousehole Primary School. Many thanks to the teachers, support staff and pupils for all their hard work. The unit was sponsored by CFPO, ESF, Cornwall County Council and supported by a range of partners including: Cornwall Fisheries Resource Centre, Design and Making Centre, Cornwall Wildlife Trust, Westcountry Rivers Trust, SciArt Solutions, Marine Conservation Society, Shark Trust, Seafood Cornwall, Newlyn Harbour and Auction. Thanks to the many Cornish fisherman who made the unit of work possible and those from the industry who have given time and assistance including: Trelawney Fish, W. Harry and Son, Robert George, Andy Wheeler, Craig Crosbie, Anthony Stevenson, Nathan de Rozarieux, Colin Warwick, Chef

Thanks to all those who contributed supporting resources:

Seafood Cornwall: P02a-u Caught Fish, P12a-i Boats, T20 Fish Destinations

Cornwall Wildlife Trust: P02 edible box, mussels

Seafish: P04a-z Fish Species

Cornwall Record Office: P06a-m Tamar Salmon and P13a-h Harbours Past

The Pilchard Works: P09a-f Sardine Fishing

Miles Hoskin: P10a-p Catch Methods, T10 Catching Information

Mal Stone: P11a-d Oyster Fishing Martin Webb: P14a-h Harbours Today Pete Langford: AV03 Downderry Bill

Fisheries Statistics Unit: T11 Catch Yield, T16 Port League Table South West Film and Television Archive: AV03 Cornish Nets

Further useful footage can be found at:

http://www.seafoodtraining.org/free_videos_from_billingsgate_seafood_training_school.htm
Also youtube can be searched for 'trawlerman' footage and 'pilchard factory' for an insight into traditional industry

Useful websites include:

General

www.seafoodcornwall.org.uk

http://www.fishandkids.org/

http://seafish.org

http://www.youngsseafood.co.uk

www.somethingfishy. Something Fishy Educational Resource Pack

http://www.richinomega3.com/ for more information about the health benefits of omega 3 http://www.mfa.gov.uk/statistics/ukseafish07tables.htm

Environment

http://www.mcsuk.org/

http://www.fishonline.org/

Fish Species

http://web.ukonline.co.uk/aquarium/index.html

http://www.mcsuk.org/marineworld/species/fish

http://www.youngsseafood.co.uk/web/fish_species.asp

Fishing Methods

http://www.fishonline.org/caught_at_sea/methods/

Line caught fishery www.cornishtuna.co.uk

http://www.mfa.gov.uk/statistics/ukseafish07tables.htm fantastic statistics on all aspects of the fisheries