

A Bio Economic Review
of Recreational Angling
for Bass (*Dicentrarchus labrax*)

Ben Dillon
Scarborough Centre for Coastal Studies
University of Hull

PREPARED FOR EAST RIDING OF YORKSHIRE COUNCIL INTEGRATED COASTAL
ZONE MANAGEMENT GROUP

Scarborough Centre for Coastal Studies
University of Hull
Scarborough campus
Filey Rd
Scarborough
YO11 3AZ

sccs@hull.ac.uk

www.ccs.hull.ac.uk

Telephone: 01723 357291
Fax : 01723 370815



CONTENTS

Summary	PAGE 1
Introduction	PAGE 1
International Angling Awareness	PAGE 3
General Background	PAGE 5
Bass Biology	PAGE 7
The Fishery	PAGE 9
Angling Specific	PAGE 13
Current issues	PAGE 17
List of Abbreviations.....	PAGE 22
Useful Contacts	PAGE 22
References.....	PAGE 23

Summary

This report aims to summarise literature relating to the recreational pastime of sea angling. The recreational angling sector is becoming more politicised than ever. This is probably related to the fact that at local, national and international level the benefits of angling to the economy are being taken more seriously than at any time in the past. The Prime Minister's Strategy Unit estimates that at least £1 billion is spent annually by sea anglers on their sport (PMSU, 2004). In 1992 the number of British anglers fishing specifically for bass (*Dicentrarchus labrax*) was estimated at 361,000, whilst at least 2 million people are believed to have gone sea angling at least once in the UK in 2002. In the EU an estimated 25 million recreational fishermen spend an estimated 25 billion Euros on their sport. Angling organisations are increasingly being viewed as equal stakeholders in the common fisheries resource. Current literature on recreational angling has been reviewed in this report, with particular attention being given to the sport of bass angling. Angling organisation websites have also been accessed to gain up to date information from organisations representing millions of anglers throughout the EU.

Introduction

In recent years the social and economic impact of recreational angling in the United Kingdom has been recognised to be of greater importance than previously thought, a consequence of angling organisations becoming more active in the public arena. This tactic appears to be paying dividends, as recreational angling has been discussed at the highest level of government. Indeed, according to a press release from the National Federation of Sea Anglers (NFSA) dated September 13th, 2003, "the debate on sea angling in the house of commons on September 8....came about because Robert Key (conservative MP for Salisbury) a sea angler himself, was encouraged by several members of BASS, the NFSA, and Sea Anglers Conservation Network to raise the subject in parliament."

Angling was also highlighted in the Government's recent report 'Net Benefits: A sustainable and profitable future for UK fishing' (PMSU, 2004). This document spells out proposals to safeguard the long-term future of the British fishing fleet, whilst also recognising the importance of other marine sector user groups. The report recognises the value of the recreational angling sector, which has in the UK been largely neglected until now, as being equally and in some cases more economically important than some current commercial fishing practices. The report states that the recreational fishing sector is a potentially significant contributor to local economies in coastal areas and that fisheries management policy should recognise that sea angling may, in some circumstances, provide a better return on the use of some resources than commercial exploitation.

The reasons angling has generally been overlooked as a significant economic contributor are numerous, but a major factor may be that the largely diffuse nature of the activity can conceal its size and significance just as the fishing port emphasises that of the commercial sector (BASSa, 2004). That angling can have a significant economic impact in coastal areas becomes clearer when we consider both young and old practice sea angling and, although mainly a male dominated sport, the number of female participants is increasing. It is carried out by solitary individuals, small groups, and in the case of competitive angling, with organised events, by perhaps hundreds of anglers fishing over a number of days (NFSA, 2003). Indeed the report from the Prime minister's Strategy Unit, mentioned above, states that in 2002 around 2 million people went sea angling at least once in England and Wales. The total expenditure by sea anglers in the UK on their sport is estimated to be at least £1 billion annually.

This review aims to examine and summarise the current literature on recreational angling. Particular attention will be given to bass angling due to its relatively recent appearance along the East Coast of England, and its continuing popularity as an angling sportfish. The fact that the Government is beginning to show an interest in the benefits of recreational angling shows that the organisations representing angling interests in the UK are increasingly being successful in their efforts to gain recognition for their members. The websites of several angling organisations (BASS, NFSA, EAA) have been consulted for this review to gain up to date information on

the sport of sea angling and to show what steps the various organisations are taking to strengthen their voice and raise their profile.

- Recreational Angling has been discussed in Parliament
- A recent Government report recognises the significance of recreational Angling
- In 2002 around 2 million people participated in Sea Angling

INTERNATIONAL ANGLING AWARENESS

Britain is not the only country to have taken an interest in the value of the recreational fishery. The American government has already recognised the value of the recreational sector. In the USA the National Marine Fisheries Service (NOAA), have used the Marine Recreational Fisheries Statistics Survey (MRFSS) for several years to monitor the marine recreational catch in most fisheries and areas for the government. The NOAA website states that “The importance of recreational fisheries has been recognised in an Executive Order signed by President Clinton in June 1995. Fisheries are a renewable resource. To make sure that fisheries are harvested at an economically and biologically sustainable level, fisheries managers (Federal and state Governments, Fishery Management Councils, and Interstate Marine Fisheries Commissions) must have information about the catch, effort, and the harvesters, including recreational anglers”. NOAA is responsible for the management, conservation and protection of living marine resources within the United States Exclusive Economic Zone (water 3 to 200 miles offshore) (NOAA, 2004). The MRFSS figures show that a number of recreational fisheries harvest as much or more than commercial fishermen. Some of the fisheries they list with high sport harvest include bluefish, red drum, striped bass, Spanish mackerel, spotted sea trout, summer flounder, and winter flounder.

In Europe the European Anglers Alliance (EAA) represents 19 nations with more than 5 million affiliated anglers and acts to protect the interests of 25 million anglers throughout Europe. The EAA has been attempting to raise the profile of anglers throughout Europe and gain greater acceptance of the social and economic benefits of

recreational fishing. They have demonstrated the importance of angling to the economy in an EAA press release dated 13 September 2003 which tells us that there are, within the European Union, 2900 companies, manufacturers and wholesalers trading in recreational fishing tackle and representing 60 000 jobs and making an annual turnover of 5 billion Euros. In addition to the revenue generated by these businesses there are also an estimated 25 million recreational fishermen who spend estimated minimum 25 billion Euros per year on equipment, transportation and lodgings in a stated 15 EU countries. The indirect economic benefits of the recreational angling sector are also highlighted by the EAA through their statement “The fishing tackle trade serves 25 million recreational fishermen representing 6.5% of the total EU population through 12900 tackle shops that employ another 39000 people.”

Ireland has also investigated the benefits of recreational angling. According to his ‘Survey of Socio Economic Surveys into Angling in the UK’, Williams (2004) states that in 1997 the Irish Government carried out a survey to look at the angling holiday potential. It concluded that angling tourism was second only to golf and worth £89 million and 3500 jobs, commercial salmon fishing was worth only £3.3 million and 800 jobs. Their 5-year plan seeks to double the angling income and jobs.

The benefits of a healthy angling sector have also been previously examined in the UK. The CEFAS Lowestoft Laboratory has studied bass and its fishery since 1981 with the intention of providing advice to the government on the state of bass stocks and the management measures needed to safeguard their future (Pawson & Pickett, 1987). Pickett *et al* (1995) state that the recreational sector is an important element in the fishery, given the considerable popularity of bass as a sport fish. It is estimated that the number of bass anglers in England and Wales increased from around 300 000 in 1987 to 361 000 in 1992, an increase of some 20% over this 5 year period. This figure applies only to the bass fishing sector, an indicator of how highly sought this fish is among anglers. The combined economic value of this sector alone has been estimated by the authors and shows that in 1992, £13.1 million was spent on shore bass angling and £5.2 million was spent on boat bass angling, for a combined estimate of £18.3 million.

Numerous other studies have also been conducted in the UK. Williams (2004) lists several surveys carried out in the UK since 1970, including the National Angling Survey 1970, National Angling Survey 1980, Milward Brown 1986 and the National Angling Survey 1994. All appear to have examined the three disciplines of fishing, sea, coarse and game, except for the National Angling Survey 1994, which concentrated on coarse and game fisheries.

It would appear that the importance of the recreational angling sector has been studied in countries around the world, often producing results showing a far greater economic impact than many governments previously thought. The quantity of information available suggests that this is an oversight that is being rectified by those same governments in an attempt to capitalise on the potentially vast sums of money recreational anglers bring to the economy.

- The value of the Recreational Sector has been studied in countries worldwide.
- In Europe an estimated 25 million anglers spend an estimated 25 billion Euros per year on their sport.
- In 1992 an estimated £18.3 million was spent in Britain by Bass Anglers

GENERAL BACKGROUND

In the UK, sea angling has been an established recreational sporting activity for many years. The popularity of Bass angling continues to increase due in a large part to its well-published fighting ability. Recreational angling magazines continue to sing the praises of this fish, conceivably prompting other anglers to specifically target this species. An increase in bass captures along the North Eastern coast of England by both the commercial and recreational sectors has also fuelled interest in this fish locally. However, it is not just the large numbers of bass anglers alone that has drawn interest from governments around the world. Increasingly, recreational anglers are being recognised as having legal and legitimate interests in world fisheries.

In a speech made in 2002 by J Kappel, president of the EAA, he pointed out that “The United Nations Code of Conduct for Responsible Fisheries clearly states that fish

stocks are not a matter for commercial fisheries interests only but one of “Humanities natural heritages”. It lists “recreation” as one of the legitimate uses of our natural fish stock resources.”

The number of anglers in the UK was sufficient for Labour to release a ‘Charter for Anglers’ in 1997, a pre-election document which states that around four million people regularly participate in the sport (of angling) – and this participation results in approximately £5 billion being spent annually on the sporting, tourism and leisure industries (from Williams (2004)). It can be seen that the economic potential from recreational angling extends further than once thought. Whilst the costs incurred by anglers on their sport include the obvious rods, reels, tackle, bait, clothing, travel, and any holiday costs, the extent of their impact on the economy extends much further. Indeed, “The huge industry catering for the needs of sea anglers includes a diverse range of businesses, charter boat operators, fishing tackle and clothing manufacturers, coastal tackle shops, bait suppliers, recreational boat builders/chandlery and many coastal tourism businesses such as guest houses/hotels, pubs, restaurants, marinas etc.”(ANGLERSNETa, 2004).

Although the recreational anglers in the UK target the same species as some commercial fishermen, they are not always managed by the same department. Whilst the Department for Environment, Food & Rural Affairs (DEFRA) has overall responsibility for the management of fish stocks in British waters, the responsibility for sea angling is shared by DEFRA and the Department for Culture, Media and sport (PMSU, 2004).

Many angling organisations operate a minimum landing size (MLS) for fish which is larger than the legal minimum, and often practice catch and release, where the fish are returned to the water in as healthy a state as possible. Often this is due to angling organisations being conservationally minded, along with the fact that in many groups larger fish are more highly prized than smaller, often juvenile fish. Sutton (2003) cites Grambsch and Fisher (1991) as reporting that the main reason anglers

voluntarily practised catch and release is that fish are “legal to keep, but too small”. Conflict between recreational and commercial fishermen can arise due to the perceived impact of one group or the other on catch rates. Obviously, catching fish increases their death rate, and so reduces the proportion of older fish in the population (Shepherd 1993a). Whilst this is undoubtedly true, fish stocks represent valuable natural resources which, if properly conserved, are capable of renewing themselves forever, thus providing a sustainable yield to man (Shepherd 1993b). For many years the intention of fishery managers has been to harvest the oceans at a commercially profitable and economically sustainable level, although the well-publicised reduction in fish stocks show this has not always been successful. Many angling organisations point to the increased efficiency of commercial fishing as a major contributor to this decline, and so long as fish stocks deteriorate the potential for conflict between legitimate user groups of the same resource increases.

- Sea Angling has been popular for many years
- A wide range of businesses cater for anglers in the UK and abroad

Bass Biology

There are 330 species of British Marine Fish. Forty-one of these are highly dependant on estuaries and about 140 are marine ‘vagrants’. These are species that are mainly freshwater or marine that visit estuaries, those which pass through on migration and those which spend most of their life cycle within an estuary. Estuaries are also important juvenile nursery areas for commercially important marine species including sole, plaice, dab, bass, sprat and herring (Environment Agency, 2004).

Not all species of fish are harvested commercially or recreationally, although both groups target the European Sea Bass, *Dicentrarchus labrax*. It is a slow growing fish, and full sexual maturity is not reached until aged 5-8, when bass will have left the protection of inshore nursery areas and recruited to the adult stock (Pickett *et al* 1995). A good description on the appearance of bass is given by Wheeler (1969) who states that bass is a long-bodied, scaly fish with a large spiny dorsal fin entirely separate from the second dorsal. It has a relatively pointed head, and the scales on the

body are large and firmly attached, with sixty six to seventy four scales in the lateral line. It is grey or blue on the back, with silvery flanks and has a white or yellowish belly. Young fish, up to 10cm in length, are often spotted with black, whilst larger specimens may rarely have a few spots on the back.

Pawson and Pickett (1987) state that juvenile bass usually grow slowly relative to many northern temperate roundfish species, reaching a length of approximately 33cm (400g, 0.9lb) after 4 years and 41cm (700g, 1.5lb) after 6 years. They also state that male and female bass appear to grow at the same rate until they reach maturity, which happens, on average, one year earlier in males. Subsequently, females tend to be larger at any given age and for 4 or 5 years after maturing are usually heavier than males of the same length. The consequence of this is that bass retained by the recreational sector are more likely to be sexually mature than smaller, yet legal bass caught and retained by the commercial sector.

The European sea bass is aptly named because it is found along the coast of nearly every country that makes up the European land mass. Bass range from the waters of the Mediterranean and Aegean, along the Atlantic coasts of Portugal, Northern Spain and western France, throughout the English Channel and on into the North Sea (BASSb, 2004). The biology of the European sea bass is further defined by Pawson and Pickett (1987), who explain that bass are lively predators taking fish, crustaceans and marine worms at any depth in the water. They are known to favour particular feeding locations, such as rocky reefs and sand banks, where prey species are abundant, and may accumulate in areas with high densities of food, especially around shoals of small fish. Adult bass are also found in localities not directly connected with feeding, where they may congregate for spawning or just to rest. During the summer, the bass population tends to move into shallow water often very close inshore, and the fishes' movements and feeding patterns seem to be strongly affected by water temperature, tides, light intensity and wind strength and direction.

Information retrieved from the BASS website explains that the experiences of anglers in the UK and records of commercial capture have, until recently, defined the northern limit of the species range as primarily within the southern half of the UK with

relatively few captures occurring in the north of the UK or from Scandinavian countries. This was generally attributed to the species requirement for warmer waters. Within the past few years however, the number of bass being reported from more northerly latitudes has steadily increased (BASSb, 2004). The reasons given to explain this movement include the gradual increase in summer temperatures of the North Sea as a result of successive mild winters and possibly the effects of global warming. Reports from anglers, commercial fishermen and government bodies indicate that the prevalence of bass along the North East coast of England is increasing, drawing attention from both the commercial and recreational sectors.

- Bass is a slow growing fish
- It is found around the coast of much of the European land mass
- Bass stocks are increasing along the North East coast of England

THE FISHERY

Pope (1982) states that “Fish are living and self-renewing: so if they are harvested wisely, they can provide a valuable continuous production.” Sustainable and stable exploitation has been the goal of fisheries management agencies since their conception. At the heart of any management policy lie basic, common sense principals: “The essence of managing fisheries to give a sustainable yield is to prevent too many fish being removed in any one year and to prevent fish being caught at too young an age”(Pope 1982). However, Caddy & Gulland (1983) state that fish stocks do not all behave in the same way, and that variations in fish landings can be classed under two main headings, fluctuations in the marine environment and variations in the fishing intensity. Management policies must therefore take into account the fact that there may not be a particular population size to which a stock will return after exploitation.

Fishing of any kind can have an impact on stocks. It is quite conceivable, with an estimated 361,000 bass anglers in 1992 and an increasingly efficient commercial sector, that significant damage could be done to a population. Indeed, the fishing

effort in the North Sea and many other places is so high that the rate of fishing mortality is 3-5 times that of natural mortality, and the stock sizes have consequently been much reduced by fishing (Shepherd, 1992). Garrod (1987) observes that when fishing effort is low, fish survive in the fishery for several years and conversely with high fishing effort the fish are removed very soon after they arrive in the fishery. This could indicate a cause for concern for all those interested in the exploitation of bass, as the fish appears to have been the most fished for summer species by shore anglers in England and Wales in 1992 (in 1987 it was 3rd), and to have been the 3rd most popular species across the year as a whole (behind cod and mackerel) (Pickett *et al* 1995).

The need to control fisheries to provide long-term benefit has been recognised for many years, and different species have to be managed in different ways. Historically, recreational anglers have had little impact on the legislation used to manage what have been predominantly viewed as 'commercial' fisheries, although this is slowly beginning to change. Pickett *et al* (1995) state that control on the exploitation of bass up to 1990 was by means of minimum landing sizes only, based wholly on biological criteria. Subsequently, measures were extended to include controls of gill-net mesh sizes and a prohibition on bass fishing in specified nursery areas. This resulted in amendments to policy to manage the fishery for the benefit of both commercial and recreational sectors taking account of social and economic factors. The intention of nursery areas is to limit the fishing effort on undersize bass, which is particularly important as, due to the relatively slow growth of the species, it is common to find 5-year old bass still in harbours and estuaries (Pickett *et al*, 1995). That the intention of fisheries management policy is now moving to manage fish stocks for the benefit of commercial and recreational fishermen is a large step toward angling organisations receiving the recognition they believe their sport deserves.

34 bass nursery areas were designated by MAFF (now DEFRA) in 1990, and these areas are shown below.

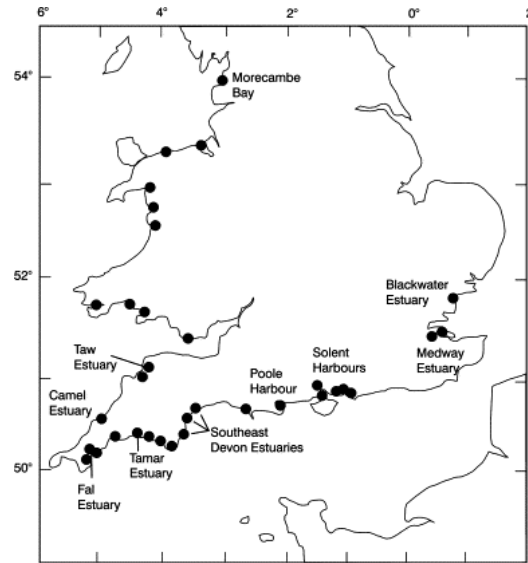


Figure 1. The 34 bass nursery areas designated by Maff in 1990. (Pickett, Kelly & Pawson, 2003). Taken from The patterns of recruitment of sea bass, *Dicentrarchus labrax* L. from nursery areas in England and Wales and implications for fisheries management.

Whilst angling organisations may choose to have tighter regulations on their catch during matches than commercial fishermen, all those who catch bass are legally required to adhere to the MLS. Eaton (1996) clarifies the situation further: “Under the 1990 legislation it is illegal for any wild bass less than 36cm total length, caught in EC sea areas 2 and 3 (covering waters from north of the Shetlands to the Straits of Gibraltar), to be retained or transhipped aboard a vessel, landed, stored, sold, displayed, or offered for sale. These provisions apply to merchants, retailers, commercial fishermen and recreational anglers.”

The European bass is exploited commercially throughout most of its geographical range, which extends from the Mediterranean, along the Atlantic coast north from morocco to Ireland in the north-west and to Norway in the north-east. It has also been a favourite quarry of sport anglers for over a century, but declining catches, which have been “particularly noticeable on the west coast of Britain and in Eire since the 1950’s (Kelly, 1979), have led anglers and conservationists to request governments to investigate the cause and, if possible, to provide remedial measures” (Pawson &

Pickett, 1987). This has generally been attempted in a manner which benefited the short-term prospects of the commercial sector whilst having little regard for the recreational sector. This is not surprising when one considers that over the last decade the commercial fishery for bass in England and Wales has consistently been in the top ten species by first sale value of the landings, and in 1994 a conservative estimate of the value of the bass landed of £18 million (DFR figures) placed it third in the list (Eaton, 1996). This figure differs markedly from that given by Pickett *et al* (1995) who state that in 1993 the estimated first sale value of commercial bass landings was some £7.9 million, with a wholesale value of some £9.9 million. Whilst it is not made clear in the text, it could be that the figure given by Eaton refers to the final sale value of the fish, or alternatively could indicate a massive increase in commercial landings between 1993-94.

The figure is almost exactly the same as that of £18.3 million for the recreational bass sector given earlier, both figures coming from the Directorate of Fisheries Research. However, economic reliance on the bass fishery is more important to the commercial sector than the recreational. As stated by Pickett *et al* (1995) bass fishing is a very significant source of income. Total employment in the bass fishery is estimated at some 435 full time, 1868 part time and at least a further 50 in the pair and mid-water trawling sector, giving a total of just over 2350 fishermen deriving some livelihood from the commercial bass fishery. Also involved commercially are charter boats although this sector is difficult to appraise. It includes both dedicated charter boats and part-time commercial boats.

The commercial bass fishery is not prosecuted equally throughout the UK, nor are the methods of capture always the same. In general however, commercial bass fishing is undertaken throughout the year, albeit with a main period between May and October, whilst pair trawlers fish more during the winter months (Pickett *et al* 1995). Additional information on the directed bass fishery is also given by Pawson & Pickett (1987) who state that around Britain bass are usually caught within a few miles of the shore, being taken commercially from small (under 10m boats) using a variety of

methods, such as gill nets (fixed and drifted), trolled lures, and long-lines and from the shore by beach seines and set nets. They are also caught in an increasingly directed fishery by bigger vessels using trawls and seines, particularly in winter, and gill nets throughout the year.

Bass is often considered a delicacy, and can fetch high prices in restaurants compared with other species. In Britain, the main market for bass is to the hotel and restaurant trade, directly from fishermen and merchants or alternatively via Billingsgate, London (Pawson & Pickett, 1987).

- Fishing of any kind can affect stocks
- Bass is fished for throughout most of its range
- Any bass measuring less than 36 cm total length must be returned to the sea

ANGLING SPECIFIC

The economic impact of recreational anglers is often less obvious than is the case for many other sporting activities, although considerable revenue is generated by anglers around the British coast. Bass angling is conducted from the shore in some of the most remote locations, particularly prior to and after the main tourism season. The economic impact is consequently taking place in those areas most in need of tourism expenditure and during the shoulders of the season (ANGLERSNETc, 2004). The fact that many anglers believe night fishing to be the most productive time for catching a number of species means that a high proportion taking part in the sport may not be noticed by the general public, thereby lessening its perceived impact.

The importance of the angling sector is receiving more attention than previously, and has produced results showing how large the economic impact of angling can be. Although in most European waters the significant economic and social benefits of recreational sport angling have generally been overlooked (BASSd, 2004), policy is changing to more fairly represent the interests of millions of anglers throughout the UK. It has generally been the case that recreational marine fisheries have traditionally

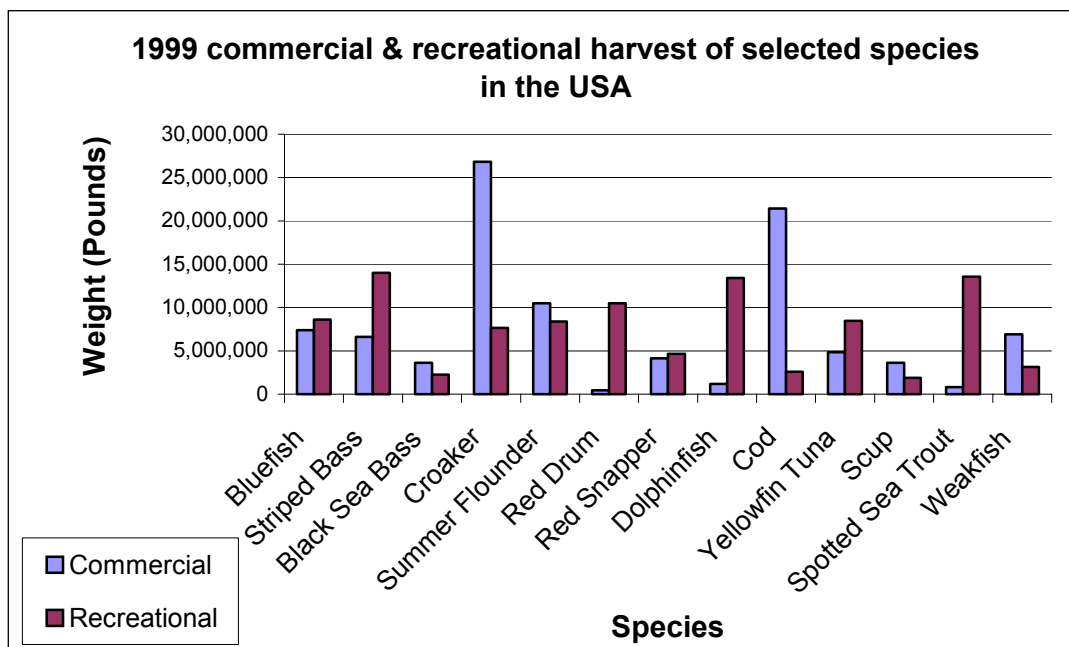
been thought of as insignificant in scale, localised in impact and economically unimportant. Indeed in many cases management authorities have regarded recreational fishing as being beyond their remit (BASSa, 2004). Whilst Current trends show that more importance is being placed on the recreational sector than ever before, angling organisations feel that they are still underrepresented. In order for future policy to fairly represent the desires of often conflicting user groups, the value of recreational fishing needs to be determined in a form which is comparable with the value of commercial fishing at any time when the economic impact of management measures is being debated (BASSa, 2004). Whilst it is true that much of the spending by recreational bass anglers goes into the coastal and tourism parts of the economy (BASSd, 2004), the economy as a whole stands to benefit from the significant financial impact of recreational anglers.

The Bass Anglers Sportfishing Society is already promoting the benefits of their sport, in an attempt to gain greater recognition of the pastime's potential economic contribution. A section of their website titled 'Alternative Tourism – The Case for Bass Angling & Conservation' states "Recreational bass angling is an activity similar to golf or sailing in the sense that it is a hobby/pastime activity on which participants are willing to spend significant amounts of their disposable income and around which they will also arrange vacation activities, whether these be full family or group holidays, or short breaks. Up to the present time, this tourism potential has gone unrecognised. This market potential for the sustainable use of this natural resource is under-exploited". The reasons they give for the popularity of this fish among anglers are that it has a high status and is in the true sense a game fish. Like salmon, it is beautiful to behold, hard fighting, very good to eat and can be caught by game fishing methods such as spinning and fly fishing, in an environment which is rugged, wild and beautiful in itself. However, whilst the potential for developing the impact of anglers does indeed exist, increasing competition between sport anglers and commercial fishermen for bass stocks around Britain has resulted in overexploitation in some areas and fears for the species' future (Pawson & Pickett, 1987).

In the Republic of Ireland the protection of sea bass is greater than in most other countries. Information taken from the Central Fisheries Board website shows that the

Bass Fishing Conservation Bye-law No. 791 of 2003 limits anglers to 2 bass in any 24 hour period and entirely bans angling for bass between May 15 – June 15. The Bye-law also lays down a MLS of 40cm. Penalties for the breach of the Bye-law include confiscation of tackle and heavy fines (CFB, 2004). BASS believe the concept of strict restrictions should be promoted at both National and European level in order to maximise the socio-economic benefits with minimal fishing mortality. The logic behind the Bye-law becomes clear when sea angling is currently valued at £27 million in the south west of Ireland. The most recent report predicts this figure to grow to £40 million within a few years (ANGLERSNETc, 2004).

The biological impact of recreational anglers on fish stocks must also be considered if a true understanding of the fishery is to be achieved. Information retrieved from FishNet USA (2004) shows that for seven of the thirteen fisheries that support the largest commercial and recreational fisheries in America the recreational harvest was greater than the commercial in 1999. The figures used were retrieved by FishNet USA from the commercial and recreational fishing statistics sections of the National Marine Fisheries Service website, and have been adapted below.



Graph 1: Showing commercial and recreational harvest of certain species in the USA. Adapted from FishNet USA number 15.

The data shows that for species including striped bass, red drum, dolphinfish and spotted sea trout the recreational harvest is far greater than for the commercial sector, although it is understandably less for other species. Whilst the recreational harvest is only about 6% of the total U.S. harvest of finfish for the 50 states covered by the MRFSS, the fishing activities of millions of marine anglers are important to monitor because they are directed at relatively few species, and can significantly affect stocks. Commercial landings by U.S. fishermen at ports in 2002 was 9.4 billion pounds valued at \$3.1 billion, where finfish accounted for 86% of the total landings, but only 44% of the value. In comparison, the 2002 U.S. marine recreational finfish harvest, including fish kept or released dead, was estimated at 89.2 million fish weighing 228.2 million pounds (personal communication from the National Marine Fisheries Service, Fisheries Statistics and Economics Division, Silver Spring, MD, 2004).

In addition to the quantity of fish landed, consideration should also be given to the impacts of catch and release angling, which may have a greater impact on a species than previously thought. Not all fish released by the recreational sector survive. Being punctured by one or several hooks, struggling against the pull of the line and being dragged through the breakers and up onto the beach or being hauled into a boat all take a toll on the fish being caught, with available research showing that from 10% to over 50% of all fish caught and released by recreational anglers subsequently perish (FishNet USA, 2004).

Millard *et al* (2003) have shown that the estimated mortality associated with striped bass captured with hook and line and then released was 28% in a freshwater environment whilst an earlier study by Diodati & Richards (1996) cited by Millard *et al* (2003) determined a 9% hooking mortality in a saltwater coastal system which equates to over 1.1 million mortalities each year for striped bass in American waters.

- The economic impact of recreational angling may be less obvious than for other sporting activities
- Potential exists for increasing the economic impact of anglers
- Sea angling is currently valued at £27 million in the south west of Ireland

CURRENT ISSUES

The debate on recreational sea angling in the UK has reached an unprecedented level, with angling organisations pushing harder than ever before for legislation which recognises the impacts and protects the interests of their members. They are shedding their old image of being groups of anglers who simply meet to compete in organised angling festivals, and are increasingly becoming highly political, targeting local and central government in an attempt to safeguard the stocks their members rely on. The vast array of literature produced, not only by angling organisations themselves but also by government and independent bodies, lends authority to their claims. Increasing numbers of individuals and government departments are taking an interest in the economic benefits of the sport, with the possibility of a fundamental change of approach to the use of certain fish stocks becoming ever more possible.

Anglers interests are currently being debated at the highest level. A press release from the NFSA dated September 13th 2003 states “The debate on Sea angling in the House of Commons on September 8 showed that more interest in sea angling is emerging in Whitehall...the debate forced Ben Bradshaw, fisheries minister, to acknowledge the importance of Britain’s 1.2 million sea anglers and admit conservation was in the interests of sea anglers and commercial fishermen alike”

Equally, a Press Statement from Mr Struan Stevenson MEP, Conservative member for Scotland and Chairman of the Fisheries Committee in the European Parliament on Recreational Sea Angling, dated 07/03/02 states “Recreational Sea Angling is an important source of income in the UK, in some instances proving to be more economically viable than commercial fishing. It is difficult to estimate exactly what this lucrative industry is worth as there has been little research undertaken on the topic so far. However, in the United States, not only does sport fishing benefit coastal communities economically, but is worth 13 times the value of commercial landings. In Europe there has been a failure to represent these high levels of national participation in policy formation.” It is unclear whether these values are for first or final sale value of species, but are obviously significant nonetheless. He goes on to

say “as chairman of the Fisheries Committee in the European Parliament, I shall continue to work to secure the best results for those in the sport sea angling industry.”

Whilst the foreword by the Prime Minister to the publication ‘Net Benefits: a sustainable and profitable future for UK fishing’ states “The fishing industry is an important part of the UK economy – in 2002 it landed over £540 million in catches and employed over 12,000 people”, on p.158 of the report we learn that “In some circumstances the economic and social benefits of sea angling for specific species may provide a greater contribution to society than if they are commercially caught. This is the case in parts of many other fishing nations such as New Zealand, Australia and the USA, where recreational sea angling has been aggressively promoted.” Never before has the importance of the recreational angling sector been so well documented by the British Government. Angling organisations will welcome the recommendations given on p159 of the report: “Fisheries departments should ensure that angling needs are represented at the local fisheries management level during their reviews of inshore management” and in particular with the recommendation that “Fisheries departments should review the evidence supporting arguments for re-designating commercially caught species for wholly recreational sea angling, beginning with bass by the end of 2004.”

This is precisely the kind of recognition angling organisations have been working towards, and shows how successful they have been in lobbying Parliament and MP’s in the recent past. Precisely what impact this report will have is currently unclear, but angling representatives are sure to press for a significant increase in input into any future legislation which impacts on what is a communal resource.

Locally, catches of bass along the North East coast have increased recently, drawing attention from both the commercial and recreational sectors. Whilst the stocks are not as heavily fished as in other parts of the country, the local fisheries protection agency, the North Eastern Sea Fisheries Committee (NESFC) wants to ensure these stocks are well managed within its jurisdiction. Accordingly, the NESFC Scientific and Research Strategy 2004 to 2009 states that in order to assist in the management of the developing bass stock an ‘emergency’ draft byelaw will be presented for

consideration at the meeting of the full committee, scheduled for the 27th April 2004. This byelaw will, for a fixed time period, place additional restrictions on the use of near shore fixed nets set to target bass. The protection of the developing bass stocks are of prime importance to NESFC, who have already conducted studies into the abundance and structure of the species within their district: “Since the early 90’s the frequency of sea bass captures has increased significantly along the North East coast. During 2002 the Committee, in partnership with local fishermen, the Environment Agency and CEFAS, facilitated a pilot study into the exploitation of bass using fixed intertidal nets. This work has yielded valuable information on gear selectivity, age length structure and movements of adult bass populations along the North East coast.”

In addition to this study, during the summer of 2003 committee officers chartered a local fishing vessel, for two days, to conduct bass sampling trials in the Filey and Bridlington Bay areas and along the Holderness coast. The committees survey work was discussed at a NESFC recreational Angling meeting held on the 11th March 2004 at the University of Hull, where it was revealed that they had caught two 1st year group bass at Filey Brigg, demonstrating that they must have originated there (personal notes, 2004). This is excellent news for both commercial and recreational groups, as it is confirmation that a viable breeding stock is present in this area of the country. In an attempt to safeguard the future of the stock, and in addition to further restrictions being placed on the capture of bass, NESFC proposes that further assessment of the developing sea bass stocks remains the focus of any finfish monitoring conducted during the next five-year period. The main priorities continue to be the identification of areas supporting high densities of juvenile fish, the assessment of migration pathways through the continuation of tagging programmes and the establishment of an annual stock monitoring programme (NESFC, 2004).

In addition to commercial restrictions, the impact of the recreational sector was also discussed at the meeting. The general consensus of those present, which included a number of recreational anglers, was that some form of recreational restriction would also be beneficial to the stocks long-term survival. The suggestion of limiting the number of bass an angler could land per day was discussed, and the response was that 2 would be acceptable, as in Ireland, and that if it applied to boats the limit should be

2 per person (Personal notes, 2004). Whether this is implemented or not, it appears that NESFC are discussing issues which are important to recreational anglers at the present time. There is little doubt that additional discourse will take place between anglers and fishery managers around the country, particularly in light of the Governments recommendations for anglers to be better represented in fishery management matters.

Although the benefits of recreational angling are only just being realised, huge potential for future development of the sector remains. The main consideration is of course the provision of fish for anglers to catch. With bass fishing, the commercial value of the species places additional strain on the stocks, and has led to conflict with the recreational sector. Further studies on the impacts of both recreational and commercial sectors will undoubtedly now be undertaken, in order to more accurately determine the relative benefits to the economy of each group. In some instances, the outcome could change policy and give anglers greater control over the way stocks are managed, or give anglers greater rights to harvest certain species than the commercial sector. It is interesting to note that wherever full economic impact assessments of sport angling have been made around the world (USA, Ireland, and even the UK) the results have shown the recreational value to be much more significant than previously thought, typically 5 times greater than the value of the commercial fishery (BASSa, 2004).

Whatever is decided, action is needed to safeguard the future of the stocks. With over 360,000 bass anglers in the UK in 1992, and around 2 million people in England and Wales participating in the sport of sea fishing at least once in 2002, any management regime will have to ensure adequate attention is paid not only to the harvesting of fish by the commercial, but also by the recreational sectors. As stated by Pawson and Pickett (1987) "A deterioration in the quality of sport angling for bass, particularly in the average size of fish caught, was apparent on some parts of the coast before the expansion of the commercial fishery. This may have been due to poor spawning success, but is more probably the result of increased exploitations of local populations by angling." In addition, Hart & Pitcher (2001) suggest that fishers are skilled at reducing the impact of fisheries regulations. They concentrate on the commercial

sector, and state that a reduction in the length of a vessel allowed to fish a particular area may simply result in a shorter, but wider and more powerful vessel taking its place. Any legislation intended to preserve bass stocks will have to ensure that it does not inadvertently result in additional pressures being placed on the stocks, by either the commercial or recreational sectors.

- The commercial fishing sector employs over 12, 000 people in the UK
- In 2002 over £540 million in catches was landed by the commercial sector
- Sea angling may prove to be more financially beneficial than some commercial fisheries
- Fisheries departments should review the evidence for angling to determine if certain commercial species should be redesignated as wholly recreational
- The local fisheries committee is already undertaking talks with anglers
- Adequate protection for the emerging bass stocks should be the focus of any new legislation

List of Abbreviations

BASS ----- Bass Anglers Sportfishing Society

CEFAS ----- Centre for Environment, Fisheries and Aquaculture Science

DEFRA ----- Department for Environment, Food and Rural Affairs

DFR ----- Directorate of Fisheries Research

EAA ----- European Anglers Alliance

MLS ----- Minimum Landing Size

NESFC ----- North Eastern Sea Fisheries Committee

NFSA ----- National Federation of Sea Anglers

SCCS ----- Scarborough Centre for Coastal Studies

Useful Contacts

BASS: <http://www.ukbass.com>

CEFAS: <http://www.cefasc.co.uk>

DEFRA: <http://www.defra.gov.uk>

EAA: <http://www.eaa-europe.org>

NESFC: <http://www.neseafish.gov.uk>

NFSA: <http://www.nfsa.org.uk>

SCCS: <http://www.ccs.hull.ac.uk>

- ANGLERSNETa, (n.d). Press Release from The National Federation of Sea Anglers. (n.d.). *MAFF Quota cuts for 2001*. Retrieved March 9 2004 from <http://www.anglersnet.co.uk/sacn/release05.htm>
- ANGLERSNETb,(2003).*A Definite bite on Whitehall's line*. Press Release. National Federation of Sea Anglers. September 13th, 2003. Retrieved March 9 2004 from: <http://www.anglersnet.co.uk/sacn/release10.htm>
- ANGLERSNETc.(2000).*Ireland shows the way forward on sustainable use of bass stocks*. Press release. BASS. 1st June 2000. Retrieved March 18 2004 from: <http://www.anglersnet.co.uk/sacn/bass05.htm>
- BASSa . (n.d). *The Benefits; Economic and Social*. Retrieved March 9 2004 from BASS website: http://www.ukbass.com/fis_bene.htm
- BASSb (n.d). *The European Sea Bass*. Retrieved March 9 2004 from BASS website: http://www.ukbass.com/spe_abou.html
- BASSc (n.d). *Alternative Tourism – The Case for Bass Angling and Conservation*. Retrieved March 9 2004 from BASS website: http://www.ukbass.com/tou_abou.html
- BASSd (n.d).*Tourism – UK and Europe*. Retrieved March 9 2004 from BASS website: http://www.ukbass.com/tou_ukeu.html
- Caddy, J.F. & Gulland, J.A. (1983). *Historical Patterns of Fish Stocks*. Marine Policy. October 1983.
- CFB (n.d). *Fishing in Ireland*. Retrieved April 2 2004 from the Central Fisheries Board website: http://www.cfb.ie/fishing_in_ireland/Angling%20Regulations.htm
- Coastal Fish*. (n.d). Retrieved March 25 2004 from the Environment Agency website: http://www.environment-agency.gov.uk/yourenv/eff/wildlife/fish/coastal_fish
- Eaton, D.R. (1996). *The Identification and Separation of wild-caught and cultivated sea bass (Dicentrarchus labrax)*. Fisheries Research Technical Report no. 103, Directorate of Fisheries Research, Lowestoft.p.5.
- FishNet USA (2004). Number 15, December 5, 2000. *The Big Lie (Part II)*. Retrieved March 18 2004 from the New Jersey Fishing Website: <http://www.fishingnj.org/netusa15.htm>
- Garrod, D.J. (1987). *The Scientific Essentials of Fisheries Management and Regulations*. Lab.Leaf.,MAFF Direct. Fish Res., Lowestoft **60**; 14pp
- Kappel, J. (2002). NFSA Speech by EAA President to WWF. Retrieved March 8 2004 from the National Federation of Sea Anglers website: <http://www.nfsa.org.uk/conservation/eaawwf.htm>
- Marine Recreational Fisheries Statistics Survey*. (n.d.). Retrieved March 18 2004 from the National Marine Fisheries Service website: http://www.st.nmfs.gov/st1/recreational/mrf_why.html
- Millard, M.J.,(2003). *Mortality associated with catch and release of striped bass in the Hudson River*. Fisheries Management and Ecology, 2003, **10**, pp. 295-300.
- NFSA. (2003). *Draft Document looking at the NFSA Conservation Group's mid-long term plans – Jan 2003*. Retrieved March 8 2004 from NFSA website: http://www.nfsa.org.uk/conservation/conservation_plan.htm
- NOAA (n.d). *About National Marine Fisheries*. Retrieved March 25 2004 from the National Marine Fisheries Service website: <http://www.nmfs.noaa.gov/what.htm>
- North Eastern Sea Fisheries Committee. (2004). *Scientific and Research Strategy 2004 to 2009*.
- Pawson, M.G. and Pickett, G.D. (1987). *The Bass (Dicentrarchus labrax) and management of its fishery in England and Wales*. Lab.Leaf.,MAFF Direct. Fish Res., Lowestoft **59**; 37pp
- Personal communication from the National Marine Fisheries Service, Fisheries Statistics and Economics Division, Silver Spring, MD.(2004). *Fisheries of the United States – 2002*. retrieved March 26 2004 from the National Marine Fisheries Service website: <http://www.st.nmfs.gov/st1/fus/current/index.html>
- Personal notes, NESFC meeting. 11th March 2004

Pickett, G.D. et al (1995). *An Appraisal of The UK Bass Fishery and its Management*. Lab.Leafl.,MAFF Direct. Fish Res., Lowestoft **75**; 47pp

Pickett, G.D., Kelly, D.F., and Pawson, M.G. (2003). *The patterns of recruitment of sea bass, *Dicentrarchus labrax* L. from nursery areas in England and Wales and implications for fisheries management*. Fisheries Research, Article in Press, Corrected proof. Retrieved March 26 2004 from the ScienceDirect website: <http://www.sciencedirect.com> doi: 10.1016/j.fishres.2003.11.013

Pitcher, t.j., Hart, P.J.B., & Pauly, D. (2001). *Reinventing Fisheries Management*. Kluwer Academic publishers. London. Ch.16.

Pope, J.G. (1982). *Background to Scientific Advice on Fisheries Management*. Lab.Leafl.,MAFF Direct. Fish Res., Lowestoft **54**; 26pp

PMSU (2004). *Net Benefits: A sustainable and profitable future for UK fishing*. 2004. Prime Ministers Strategy Unit.

Recreational Fisheries and Tourism in the new EU Constitution Retrieved March 18 2004 from The European Anglers Alliance website http://www.eaa-europe.org/2003/PFP/Press/EU_Treaty-Press%20release_EN_Final-2003.doc

Shepherd, J.G. (1992.). *Aide Memoir on Scientific Advice on Fisheries Management*. Lab.Leafl.,MAFF Direct. Fish Res., Lowestoft **70**; 18pp

Shepherd, J.G. (1993a). *Why Fisheries Need to be Managed and Why Technical Conservation Measures on Their Own are not Enough*. Lab.Leafl.,MAFF Direct. Fish Res., Lowestoft **71**; 15pp

Shepherd, J.G. (1993b). *Key Issues in the Conservation of Fisheries*. Lab.Leafl.,MAFF Direct. Fish Res., Lowestoft **72**; 19pp

Stevenson, S. (2002). *Recreational Sea Angling*. (Press statement from Mr Struan Stevenson MEP). Retrieved March 8 2004 from the National Federation of Sea Anglers website: http://www.nfsa.org.uk/conservation/cfp_campaign/responce_stevenson.htm

Sutton, S.G. (2003). *Personal and Situational Determinants of Catch-and-Release Choice of Freshwater Anglers*. School of Tropical Environment Studies and Geography, James cook University, Australia.

Wheeler, A. (1969). *The fishes of the British Isles and north-west Europe*. Macmillan

Williams, T. (n.d.). *Survey of Socio Economic Surveys into Angling in the United Kingdom*. Retrieved March 8 2004 from the National Federation of Sea Anglers website: http://www.nfsa.org.uk/conservation/Cons_Socio_Eco_Survey.htm

Picture on front cover adapted from Colins Pocket Guide to the Sea Shore of Britain & Northern Europe. Peter Hayward, Tony Nelson-Smith, Chris Shields.(1996). Harper Collins Publishers. London.