

Banc d'Arguin a Nursery for fish species

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Summary

In the period from 27-01-2002 until 18-03-2002 126 samples, totalling an area of 6139.58 m², on different substrates (*Zostera*, *Tidal pool*, *Sand*, *Gully Zostera* and *Gully Cymodocea*) were collected with a Beam trawl in the Baie d'Aouatif, located in the Parc National du Banc d'Arguin, Mauritania. This was done to test the hypothesis that the Banc d'Arguin has an ecological function as a nursery for juvenile fish.

3347 individuals of 25 different species were caught, 2 of those species belonged to the class of *Cephalopoda*. Of the twenty-three fish species, those species belonging to the family of *Gobiidae* and the Sub-family *Syngnathinae* were the most common species.

During the research period no significant length change was detectable for *Syngnathus typhle* and *Diplodus sargus* on the different substrates, but the sample sizes were low for these two species. One possible explanation for this is an elongated or continuous spawning period combined with a size dependent competition for substrate. A length change was detectable only for *Gobius minutus* on the *tidal pool* substrate.

The data of 8 species has been looked at on a more species-specific level, in order to detect if these species have a preference as to the substrate. Most species seem to have a preference.

Most individuals caught belonged to the juvenile stock of their species, except for the *Syngnathinae* which were mainly adults.

Of those 8 species that are looked at on a more species-specific level, 4 use this area as a year-round habitat. Individuals in all stages of their life cycle can be found within this area. These species are *Gobius minutus*, *Gobius microps*, *Syngnathus typhle* and *Diplodus sargus*.

The other 4 species: *Solea senegalensis*, *Liza falcipinnis*, *Sardinella aurita* and *Mugil cephalus* use this area as a nursery. Although the found densities of these species is rather low this means that the hypothesis, stated above, should be accepted.

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Introduction:

The Banc d'Arguin is an area of tidal flats and shallow water along the coast of Mauritania. The Sahara on the east side and the Atlantic Ocean on the west side border the area. It is characterised by shallow waters and tidal flats. The tidal flats consist of sandbanks and mudflats of about 490 km² and are mainly covered with seagrasses (Wolff and Smit, 1990).

The Banc d'Arguin is situated in a transition zone, twice a year the northern subtropical hydrodynamic front passes over. This causes large variability in the abiotic characteristics (temperature, salinity e.g.). The Banc d'Arguin fauna will therefore show temperate, subtropical as well as tropical elements (Jager, 1993).

The tidal flats are assumed to be ecologically comparable to those of the Dutch Wadden Sea, which plays an important role in the development and dispersion of several economically important fish and invertebrates, e.g. plaice and shrimp.

Several species are using the Dutch Wadden Sea as a nursery for their offspring. Almost the entire population of juvenile plaice moves with the tides onto the flats, and back into the channels (Kuipers, 1973). These migrations are feeding migrations. At the beginning of the rising tide most of the young plaice caught have no stomach content, this in contradiction with those caught later (Kuipers, 1977).

The potential function of the Banc d'Arguin for larval and juvenile fish has, however, hardly been investigated. Jager (1993), using a beamtrawl in subtidal areas, found the largest number of fish in the shallow waters around Tidra. They were on average smaller than in the deeper areas. The number of fish at the intertidal flats has not been examined, because in shallow waters up to 2 meters deep, the disturbance by a boat and trawl is large, especially for the larger fish. Furthermore, without disturbance the efficiency of the 2m beam trawl declines when the length of the fish increases (Kuipers, 1975).

In 1984 and 1985 some observations have been carried out on the tidal flats in the Banc d'Arguin region. This was done to determine if migrating species might constitute an additional food source for shorebirds (Campredon & Schrieken, 1986). Although there was not enough data obtained for definitive conclusions, a species list was compiled.

Jager (1993) concluded that more study was required to assess the importance of the Banc d'Arguin in the life cycle of fish species. Vonk (2001) attempted to determine the fish species composition on the flats with fykes and gill nets. However, only large specimens were caught, which were mainly predators. Only a few small fish were obtained with these methods.

The data obtained during those experiments in 1984, 1985, 1988 and 2001 suggests that the ecological function of the Banc d'Arguin might be comparable to that of the Dutch Wadden Sea. From this follows the hypothesis:

The Banc d'Arguin has an ecological function as a nursery for juvenile fish

In order to test this hypothesis we used the same 2m-beam trawl which has been used both in the research of Kuipers (1973, 1977) and the experiments of 1984 and 1985 at the Banc d'Arguin. Although there will be disturbance in the shallow waters above the tidal flats this will mainly affect the larger specimens. As this research will focus on the juvenile specimens, this catching method is useable to determine the importance of the flats for those specimens.

The research of Kuipers (1973, 1977) in the Dutch Wadden Sea, has been performed in a relatively small area: the tidal flats surrounding the Marsdiep. This was done after initial results indicated the highest density of the juvenile plaice was at this location. The assumed reason for this higher density is the substrate composition; the flats in this area belong to the larger sand flats. This indicates that substrate composition can be of importance for the presence and density of a species.

Materials and Methods:

All data was collected from 27-01-2002 until 18-03-2002 in the Baie d'Aouatif (fig.1.). This is a tidal flat area in the Parc National du Banc d'Arguin. (For further information about the location of the Baie d'Aouatif within the Parc National du Banc d'Arguin we refer to Appendix A.V.) This bay consists of a large tidal flat with a large gully. The flats are mudflats partly covered with *Zostera* and on the deeper parts with *Cymodocea* seagrass beds. Other parts consist of sand largely covered with dead *Anadara* shells. Some Creeks and (inter) tidal Pools remained covered with water during low tide

During low tide 30 sample points were selected according to substrate. They were marked with an iron rod, and their position was ascertained with a hand-held Global Positioning System (GPS), in order to retrieve the location at high tide. These 30 sample points were situated on two different flats. The types of substrates selected were 1) tidal pools, 2) *Zostera* beds 3) sand (no to little growth of seagrasses). These three substrates located fairly close to one another were called a sampling set.

In total 10 sampling sets were created. Each set was sampled thrice within a fortnight after the first sample was taken. The exception was one set situated on the Arie flat, which was sampled seven times during the sampling period. This in order to estimate the relative length change during the sampling period.

An additional 5 sample points were marked in the channels around the flats on two different substrates, namely *Zostera* and *Cymodocea*. As they were located in the channel they were named Gully/*Zostera* and Gully/*Cymodocea*. These sites were on the border of the flats and it is expected that these substrates will be comparable in species composition with those on the flats. Further one can expect relations between these substrates bordering the flats and those on the flats. See table 1 in appendix A for names and geographical position of the sample sites.

In order to assess if there was a difference between different flats the sample points were divided between two flats on either side of a channel: namely the Francesc flat and the Arie flat. These were named after the participants of the 2001 project, who did most of their research on that flat. The Francesc flat was lying some 20-cm lower than the Arie flat, thus being slightly deeper. This leads to a smaller interval of feeding time (on the Arie flat) for fish species, and thus a smaller period in which these potential predators can feed on the specimens that migrate towards a substrate situated on the flat. The type of predominant Gully substrate was a difference between both flats as well. The Francesc flat was mainly surrounded by the Gully *Cymodocea* substrate, with just a relatively small patch of Gully *Zostera*. The Gully composition of the Arie Flat is just the other way round, mainly Gully *Zostera* with a few relatively small patches of Gully *Cymodocea*.

As made visible in fig. 1 the Francesc flat marked with an F isn't just lower it is also a smaller flat. This leads to the biggest difference between the flats. As the Francesc flat is smaller, but still has multiple substrates it is to be expected that the size of those 'fields' is smaller as well. The Arie flat is marked with an A.

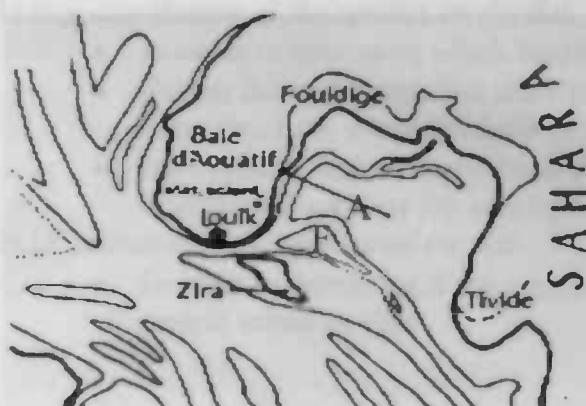


Fig. 1. Baie d'Aouatif

arriving on the sample site, the beam trawl was walked out in a circular movement around the sampling location, and thus manually placed on the best suiting location. Due to the shallow nature of the area trawling down wind and down stream was preferred. This reduces the power needed to pull the beamtrawl over the seabed, and thus the depth of the rotor

The length of a trawl haul (see Appendix A.VI for information on how the length of a trawl haul is determined) was mainly dictated by the size of the patch of substrate, as tidal pools are relatively small in size, so are the samples. As test samples showed low densities on the sand substrate it was decided to make the length of the trawl hauls on these substrates longer, to prevent artifacts due to low densities. As currents and wind direction isn't fixed, neither is the direction of a trawl haul. The sample points however were fixed and although the size of a substrate doesn't change the length and the width of any substrate can differ greatly. Consequently so can the length of two different trawl hauls on the same substrate.

After the samples where collected, vegetation, crustaceans and other invertebrates were removed, leaving only the fish species and the cephalopods. All of the remaining specimens were identified and the snout-tail-fork length was measured. From those species that seemed to occur in higher abundance, multiple individuals where preserved in alcohol of 96%. This to determine length-weight ratio (by weighing) and diet (by dissection).

Identification was done with the aid of *Les poissons de mer de Mauritanie* (Maigret & Ly, 1986), *Vissen van de Europese kustwateren en de Middellandse zee* (Lythgoe & Lythgoe, 1971) and verified with the aid of <http://www.Fishbase.org>

At species level I will be looked at:

1) *Size distribution of the species on the flat.*

- In order to determine which length classes belong to the same year class.
- To test the hypothesis that there is no difference in size distribution between these two flats, for individuals of the same species (χ^2 test for independence)
- As well as to test the hypothesis that there are no differences in size distribution between the substrates (Anova)

2) *Distribution of the species on the flat.*

- In order to determine if the species (independent of size) has a preference for a certain substrate type.

Results & Discussion:

In this chapter first the general results will be presented and discussed. Afterwards 8 species will be looked at on a more species-specific level. The data concerning these species will be presented and discussed. All figures and numbers considering the biodiversity, spatial distribution and density of species are derived from n/m^2 . The size distribution and relative length change, however, are derived from the total number of individuals caught.

General results

Biodiversity

Between 27-01-02 and 18-03-02 an area totalling up to $6139.58 m^2$ was sampled (in a total of 126 different hauls). A total of 3347 individual specimens were caught, leading to a density of 0.545 individuals per meter squared. The specimens were of 25 different species, of which two were of the cephalopod family, namely *Sepia officinalis* and *Loligo sp.* The latter was only caught once, in a gully. *Sepia officinalis*, however, was caught on multiple occasions.

Of the twenty-three fish species listed below (table 2), those species belonging to the family of *Gobiidae* and the Sub-family *Syngnathinae* were the most common species. (For species composition per flat see Appendix AII biodiversity on the flats)

Flat	Arie (n/m^2)	Francesc (n/m^2)	Total (n/m^2)
M2 sampled	3663.187	2476.397	6139.584
<i>Arius latiscutatus</i>	x	0.000	0.000
<i>Atherina sp.</i>	0.021	0.013	0.018
<i>Bathysolea polli</i>	0.000	0.000	0.000
<i>Boops boops</i>	0.001	x	0.000
<i>Dicentrarchus punctatus</i>	0.001	0.001	0.001
<i>Diplodus sargus</i>	0.014	0.014	0.014
<i>Ephippion guttiferum</i>	x	0.000	0.000
<i>Epinephelus anius</i>	x	0.000	0.000
<i>Ethmalosa fimbriata</i>	0.000	0.000	0.000
<i>Gobius microps</i>	0.039	0.016	0.030
<i>Gobius minutus</i>	0.418	0.340	0.387
<i>Hippocampus hippocampus</i>	0.000	0.000	0.000
<i>Liza falcipinnis</i>	0.007	0.007	0.007
<i>Loligo sp.</i>	0.001	x	0.000
<i>Mugil cephalus</i>	0.005	0.006	0.005
<i>Eucinostomus melanopterus</i>	0.002	0.004	0.003
<i>Sardinella sp.</i>	0.001	x	0.000
<i>Sardinella aurita</i>	0.004	0.008	0.006
<i>Sepia officinalis</i>	0.007	0.008	0.007
<i>Solea senegalensis</i>	0.011	0.007	0.009
<i>Solea vulgaris</i>	x	0.001	0.000
<i>Stephanolepis hispidus</i>	x	0.003	0.001
<i>Syngnathus kaupi</i>	0.006	0.006	0.006
<i>Syngnathus typhle</i>	0.049	0.044	0.047
<i>Tilapia sp</i>	0.002	0.002	0.002

Table 2. Species densities (N/m^2) per flat

Of the 8 species that have only been found on one of the flats, only *Stephanolepis hispidus* has been caught on more than once.

Discussion on Biodiversity

First and foremost one should realise that the list of species inhabiting this area is far from complete, because we observed 'new' species until the end of our study period. In the last three days of the sampling period three 'new' species were added to the species list, all of these individuals were clearly juveniles. Further is it reasonable to assume that there are other species frequenting this area outside the sampling period.

Density on the flats

Figures 2 and 3 depict the density on the Arie flat per substrate. Substrates are on the x-axes whilst the density in n/m^2 is presented on the y-axes.

The five species presented in this graph are the five most abundant in the bay. *Syngnathus kaupi* and the *Atherina sp.* are presented here to make it visually more clear what the scale of difference in abundance is, with respect to the other five species depicted in the density graphs

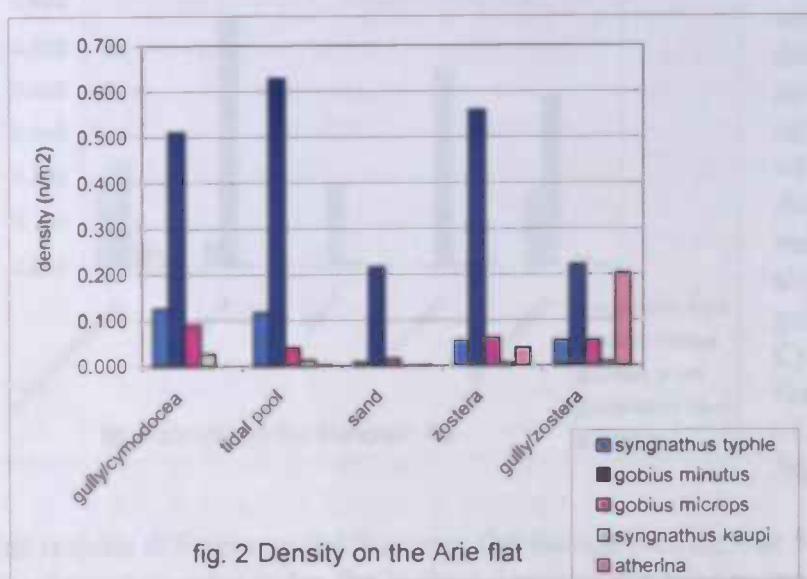


fig. 2 Density on the Arie flat

(fig.3).

Gobius minutus has the highest density on all substrates. Even on the sand where all species have a lower density, *Gobius minutus* is about 10 times more abundant than any other species. The sandy substrate seems to be avoided by most species as none of the 10 species depicted in these graphs has a high abundance on this substrate. On the other substrates the difference is less striking but none the less clearly visible.

The only species that has a density just as high is *Atherina sp.* and then only on the gully/Zostera substrate. Looking at figure 3 one should note that the density of this species on this substrate is much higher than on

all other substrates. The densities of the other species depicted in this graph are more in the order of the density of *Syngnathus kaupi*, also depicted in both graphs.

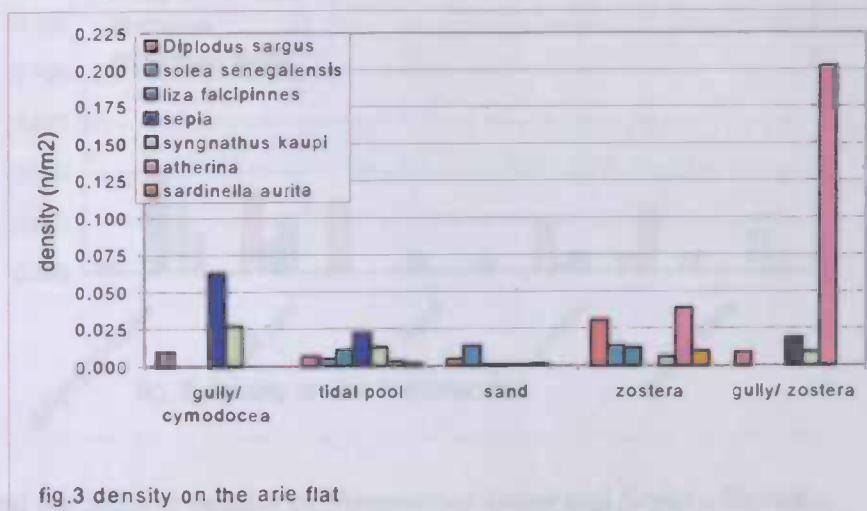
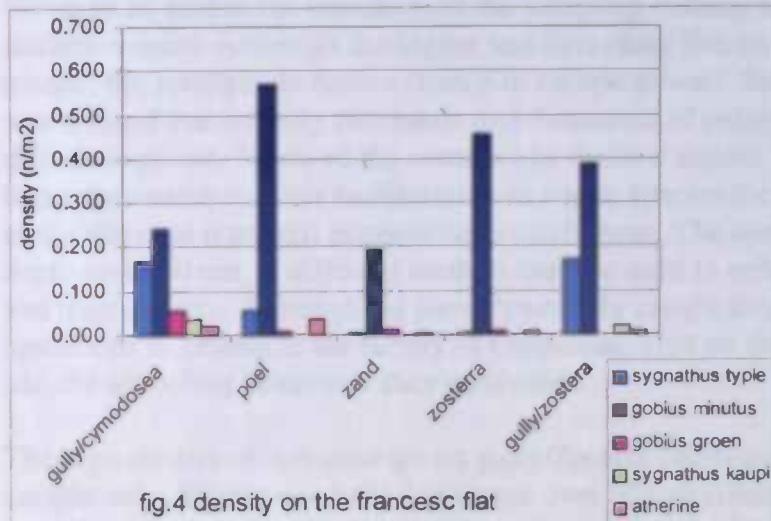


fig.3 density on the arie flat

The species with the highest densities in the *tidal pools* are *Gobius minutus* and *Syngnathus typhle*. *Liza falcipinnes* has the same density in the *tidal pool* as it has on the *Zostera*. On *Zostera* the following species have the highest densities: *Gobius microps*,

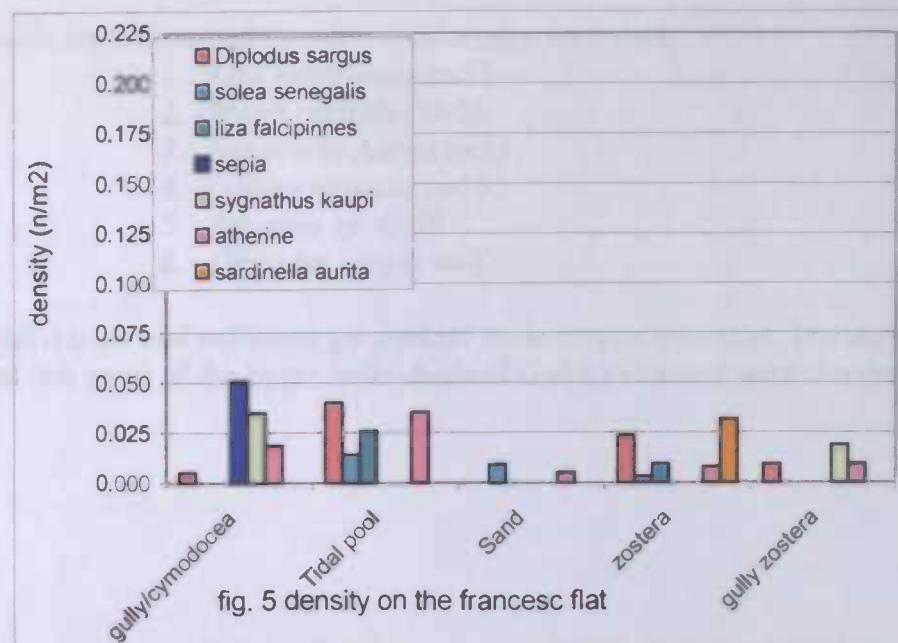


Diplodus sargus and the *Sardinella aurita*. *Solea senegalensis* has the same density on *Zostera*, as on sand, though these are the only substrates on this flat where it has been caught. *Atherina sp.* has as mentioned its highest abundance on the *gully/Cymodocea* substrate. On the *gully/Zostera* substrate we find the highest abundance of *Syngnathus kaupi* and *Sepia officinalis*.

This is quite different on the Francesc flat though (see fig.4 & 5) the differences in densities are in same order, the highest densities per species are not always located on the same substrate. Although *Gobius minutus* still has its highest density in the *tidal pool*,

Syngnathus typhle now has its highest density on the *gully/Zostera*, while *Atherina sp.* no longer has its highest density on this substrate but in the *tidal pools*, together with *Diplodus sargus*, *Liza falcipinnes* and *Solea senegalensis*. On the

gully/Cymodo-



cea substrate we still find the highest density of *Syngnathus kaupi* and *Sepia officinalis* but they are accompanied by *Gobius microps*, a species that has its highest density on the Arie flat on the *Zostera* substrate. *Sardinella aurita* is the only species on the Francesc flat that still has its highest density on the *Zostera* substrate.

Discussion on Density on the flats

Our figures without doubt underestimate the densities on the flats for 2 reasons. First and foremost as said in the introduction the sampling method has a disturbing effect in shallow waters. Although the bigger and thus older fish have far greater chance on escape, the younger do have a chance to escape as well. Secondly during the research it was noticed that literally thousands and thousands of pelagic schooling specimens, of different species, followed the coastline in shallow waters. Attempts were made to catch these specimens in order to determine to which species they belonged. With the material at our disposal it proved impossible to catch these. The specimens seemed to prefer a depth up to 50 cm. A different method must be used in order to determine these species and their density. Although we haven't actually caught any of them, we assume these specimens to belong to the family of Clupeidae. This on the basis of their general form and the schooling behaviour they exhibited.

The high density of *Atherina sp.* on gully/Zostera substrate on the Arie flat is due to one sample only. Within one haul there were over 50 individuals of this species. Although it is a schooling species all other catches of this species taken together didn't involve more than about a dozen. As the channel is deeper then the flats are, it is possible that we happened to stumble on a school and caught them all.

Gut content

The following species were dissected in order to determine their diet.

1. *Liza falcipinnis* n=13
2. *Mugil cephalus* n=26
3. *Sardinella Aurita* n=33
4. *Gobius minutus* n=101
5. *Atherina sp.* n=75
6. *Diplodus sargus* n=57

None of the 305 individuals had sufficient gut content to determine their diet. The only result obtained was that some of the larger individuals of *Gobius minutus* were carrying eggs.

Discussion on Gut content

The absence of gut content can be due to many reasons. The first that comes to mind is that these individuals were caught before they were able to feed. How reasonable this might sound, it is nearly impossible, because earlier research has shown that the main reason for juveniles to expose themselves to predatory birds on the flats is foraging. The timing of the three hours around high water was not only chosen for practical reasons but also to allow the individuals to feed before being caught (Kuijpers, 1977). Although one could theorise that those caught early in the sampling period hadn't had enough time to feed; those caught at the end of the sampling period should have had gut content.

As none of the 305 individuals have gut content the reason must be searched in the conservation method applied. As specimens were caught they ended up in a bucket on the boat. Then the other samples were taken. Some days up to 6 samples a day. Upon arrival at the station all samples were cleansed of matter of no interest for this research, after which the identification took place. Although most of the dissected specimens were deceased before they were handled some were selected for their length while they were still alive. As dissection took place in the lab in Groningen, those specimens all were conserved in alcohol of 96%. Whether an individual is deceased or not, the process of digestion is not halted immediately after the individual dies. The enzymatic process will continue as long as enzymes are present. The relatively long period between catching and conserving of the individual (sometimes up to 6 hours) could lead to digestion of all the food present within the gut. Furthermore the conservation fluid used (96% alcohol) disperses slowly through the body of the specimen. This means that after the individual was conserved the enzymatic processes weren't halted immediately. This will have led to an even longer period of possible digestion of the food particles.

Relative length change

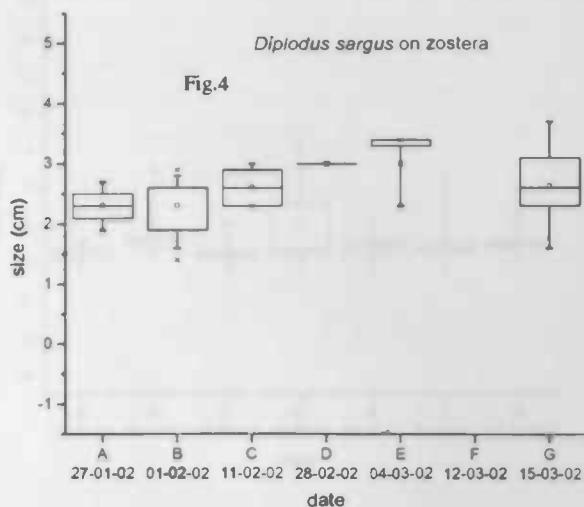
The number of species, for which one can ascertain the relative length change during the sampling period, is dependent of the number of species that are caught regularly on the sample site. Only three species were caught regularly and in sufficient numbers on the for this experiment chosen sites during the sampling period. These were *Gobius minutus*,

Syngnathus typhle and *Diplodus sargus*. However only *Gobius minutus* was found frequent enough on all three substrates.

Syngnathus typhle was only found regularly enough on Zostera and Tidal pool. *Diplodus sargus* was only found on Zostera on regular basis.

Diplodus sargus

Figure 4 is a standard box-plot of the length of the caught *Diplodus sargus* on different days on the



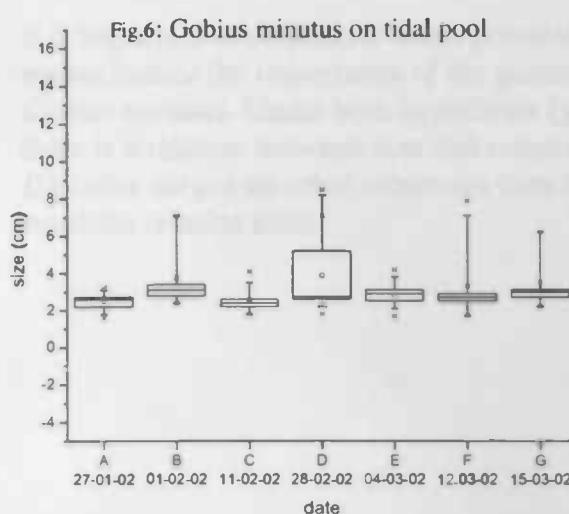
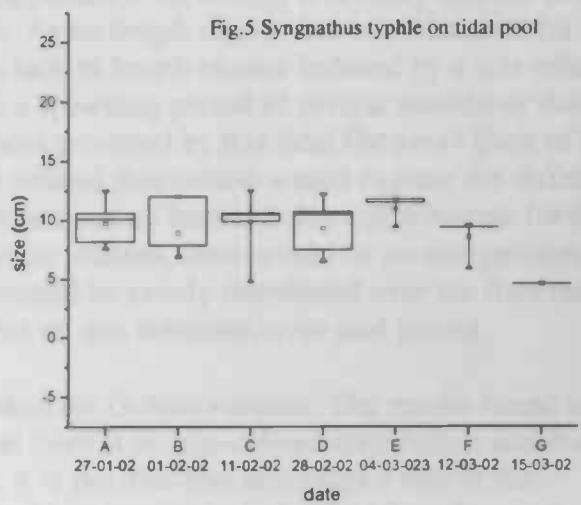
'gras' sample point. The size (cm) is depicted on the Y-axes and the different sampling data on the X-axes. It depicts the relative length change of *Diplodus sargus* on Zostera between 27-01-2002 and 15-03-2002. Although the figure suggests an increment of the average length of the *Diplodus sargus* over the period between 27-01-2002 and 04-03-2002, the means of all sampling data are NOT significantly different. (See Appendix B.XVI).

Syngnathus typhle

Fig. 5 is the standard box plot of length of caught *Syngnathus typhle* on different days on the tidal pool substrate sample points. The size (cm) is depicted on the y- axes and the date on the X-axes. It depicts the relative length change of *Syngnathus typhle* between 27-01-02 and 15-03-02. The figure suggests a small increase in average length until 04-03-04 and then a decline in average length. The means of all sampling date are NOT significantly different, both on the tidal pool and Zostera. (See Appendix B.XVIII & A.III)

Gobius minutus

Fig. 6 is the standard box plot of length of caught *Gobius minutus* on different days on the tidal pool substrate sample points. The size (cm) is depicted on the y- axes and the date on the X-axes. It depicts the relative length change of *Gobius minutus* between 27-01-02 and 15-03-02. The figure suggests a small increase in average length. The means, of all sampling data on this substrate are significantly different.



The figures of *Gobius minutus* on both Zostera and Sand also suggest an increase in average length, however the means of all sampled data on these substrates are NOT significantly different. (See appendix B.XVII & A.IV).

Discussion on Relative length change

With the exception of *Gobius minutus* on the *tidal pool* substrate the means of the data were NOT significantly different. This doesn't imply that these species have no growth, it merely implies that on the population level, during this period, no differences in average length were detectable for these species on that substrate.

Taking in to account that the power of the statistical tests used both for *Syngnathus typhle* and *Diplodus sargus* is rather low, because on one or several sampling dates the sampling size was three or even less individuals of those species, these results should be used with caution.

When the average size of both *Gobius minutus* and *Diplodus sargus* is compared with the maximum length of these species (see appendix C.III & C.I), it is likely that the caught individuals belong to the juvenile stock. As no length chance has been detected for *Diplodus sargus* questions arise: is this lack of length chance induced by a size-related distribution? And if so, has this species a spawning period of several months or does it reproduce year round under circumstances provided by this tidal flat area? Both of these possibilities in combination with a size-related distribution would explain the difficulty to detect a length change. Or is there no relation at all between size and substrate for this species? In the latter case, when there is no relation, there would be no competition for substrate and the juvenile year classes would be evenly distributed over the flats thus making it harder to detect length changes on one substrate, over said period.

Though the same questions could be asked for *Gobius minutus*. The results found on the *tidal pool* substrate seem to indicate that there is no size-related distribution and that there is only one spawning period. However, it is possible that size plays a role in the distribution over the different substrates. How longer the individual, how bigger the chance it can retain its place on the advantageous substrate. This would lead to a concentration of larger individuals on this type of substrate. Furthermore, if size were related to the type of substrate individuals of the same size class would be more or less concentrated within the same area. Therefore it would be easier to detect the relative length change, then when there is no preference present at all.

It is important to emphasise that a possible relation between size and substrate does by no means reduce the importance of the question of the duration of the reproduction period of *Gobius minutus*. Under both hypothesis (year round or several months) it is possible that there is a relation between size and substrate. Furthermore, the absence of sufficient *Diplodus sargus* on other substrates than *Zostera* doesn't exclude a possible size-substrate relation either.

When comparing the average length of *Syngnathus typhle* with its maximum reported length it is less likely that the specimens caught belong to the juvenile stock, as is the case for *Gobius minutus* and *Diplodus sargus*. Taking into consideration that multiple male specimens of this species from 8 cm upward were found to be carrying fertilised eggs in different stages of development in their breeding pouch, it is safe to conclude that most of these specimens belong to the adult stock. As the adult stock is abundantly present within the sample it is more likely that little to no differences in the means are found; in most species the rate of growth is lower to absent in adults, compared with juvenile growth.

Results on species level

In this part the data will be presented on a species level for 8 abundant species. The densities in which these species have been found on the different substrates are presented in appendix A.I table 3a & 3b

Some general points of discussion regarding all species will be mentioned before we will take a closer look at the species themselves.

General discussion on Size distribution of the species on the flat

The absence of the size class 0 to 1 cm on all substrates is amongst others due to the sampling method. It is possible to obtain these individuals by reducing the mesh width of the beam trawl. However, reducing the mesh width could lead to another problem; the net could become clogged with debris. The mesh of the net would become so small that there might be a chance that particles of organic matter block the mesh and thus prevent the water from passing through efficiently. At higher trawling speeds this could lead to ripping of the net. If the net does not rip, but is clogged the water would probably circulate, and thus the sampling method would be very unreliable.

A final note considering the results on species level that must be made is the fact that, although these results are discussed as if the data obtained about the species are merely species dependant, all data has been derived from a functioning ecosystem. Thus all data is influenced by the make up of this system. One can neither exclude influences by other species on size-, or any other form of, distribution. Nor can one quantify these possible influences, within the data obtained. Preferences for certain types of substrate found cannot be extrapolated to a species level under different ecological circumstances. This means that any found preference can be area specific and induced by competition between or within a species.

General discussion on Distribution of the species on the flat

Some substrates have few representatives of one or more species, leading to very low numbers of individuals on that substrate. When looking at the size distribution per substrate this matters, since all individuals on that substrate are compared on a size base. A low number of specimens on a substrate will lead to an unreliable result.

However, when one is looking at the distribution of a species on the flat, a low number of specimens does not mean that the result is unreliable. In this case the number of samples, and their size (m^2 fished) is important. For one is attempting to quantify the density on and importance of a substrate for that species on that flat. It is assumed that the general distribution follows the distribution presented though deviations are not excluded. Deviations can be caused by a range of factors, starting with chance during the investigation, availability of food, shelter, avoidance of different types of predators ranging from endemic bird and fish species to temporal guests of the area. All these factors can vary from year to year and even from day to day.

Further more it is very well possible that during different seasons, there are not only differences in biodiversity but also differences in distribution of those species, which are endemic to the region.

Diplodus sargus sargus

For species information see appendix C.I

Size distribution on the flats

In Fig 7 Size distribution *Diplodus sargus* on the Arie flat, depicts the size distribution per substrate. The Y-axis depicts the frequency in which a certain size class occurs, whilst the substrate is on the X-axis. Each size class is represented by a coloured bar which corresponds with the same colour in the legend, showing the outer limits of each size class (cm). The corresponding numbers above the tidal pool & sand substrate indicate that the means of these samples are NOT significantly different (see appendix B.I.a.)

Although a visual difference in size classes is present, Zostera seems to be the only substrate where representatives of all selected size classes are present; most specimens found are within the size classes 2 to 2.5 cm (0.38) and 2.5 to 3 cm (0.35).

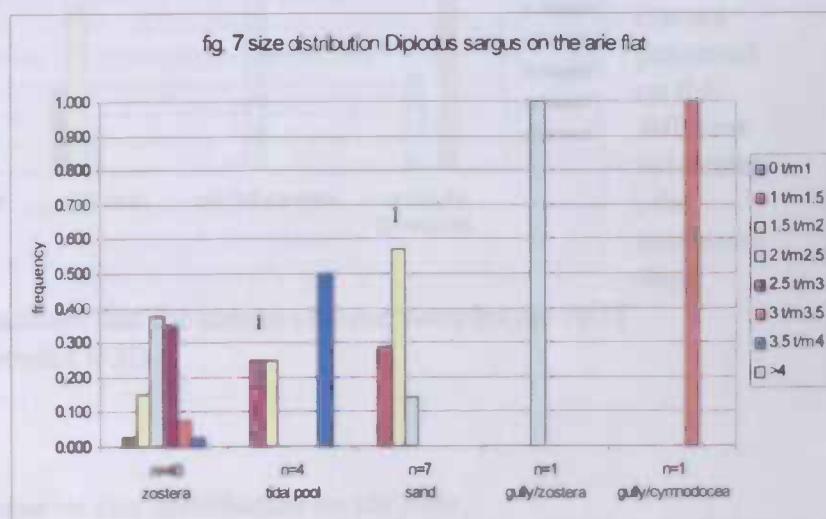


Fig. 8 Size distribution *Diplodus sargus* on the Francesc flat, depicts the size distribution per substrate. Although there is a visual difference in size classes presented on the

different substrates, the corresponding numbers above the four substrates where *Diplodus sargus* is present indicate that the means of these samples are NOT significantly different. (See appendix B.I.b.)

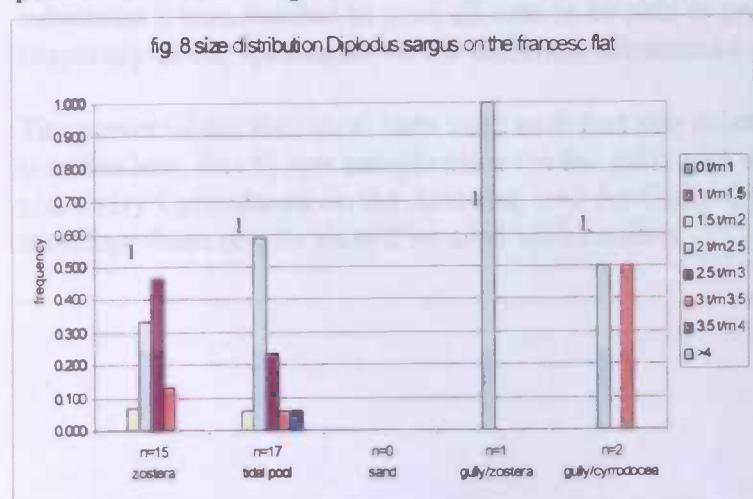
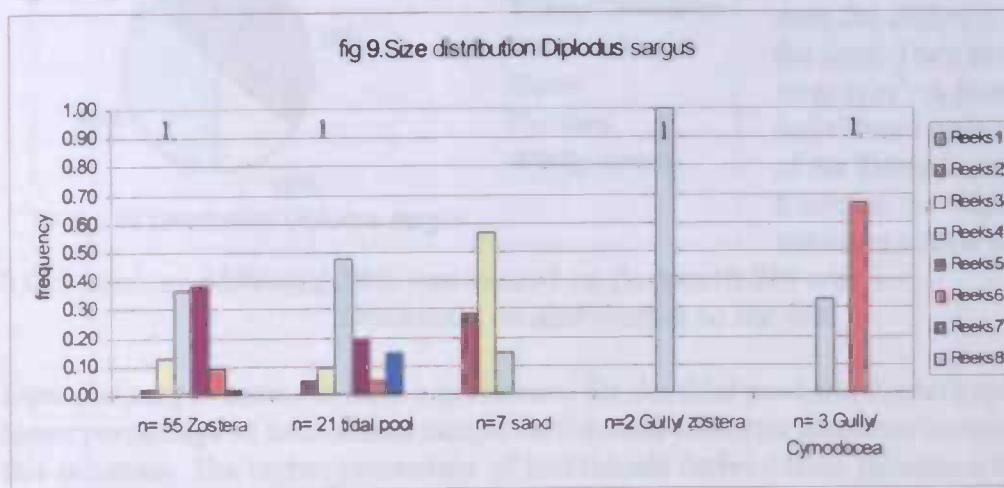


Table 5 to 6 in Appendix B.XIX present the results of the χ^2 test for independence for *Diplodus sargus*. Only on

the tidal pool substrate, after a Yates correction the H_0 (there is no difference between these flats) was rejected, meaning there is a difference in size distribution between these two flats for the tidal pool substrate. However on the Zostera substrate no differences were detectable.

Fig 9 depicts the size distribution of *Diplodus sargus* after pooling the data, of the two flats.



Although there is a visual difference in size classes presented on the different substrates, the corresponding

numbers above the substrates indicate that the means of these samples are NOT significantly different. (See appendix B.II)

Discussion on size distribution on the flats

After comparing the average length of the caught individuals with the maximum length of the species it is acceptable to assume the caught individuals belong to the juvenile stock.

The only found significant variation between the flats, the tidal pool substrate, is based on one degree of freedom. As it was not possible to reject the H_0 for the four remaining substrates it was decided to pool all data to be able to present a better overview of the frequency of the specimens on the different substrates over the total area.

The power of the statistical tests used to detect size related preferences to substrate type is rather low, due to low sample sizes (in the gully n=1 for Gully Zostera on both flats and Gully Cymodocea on the Arie flat, n=2 for Gully Cymodocea on the Francesc flat), therefore these results should be used with caution.

Distribution on the flats

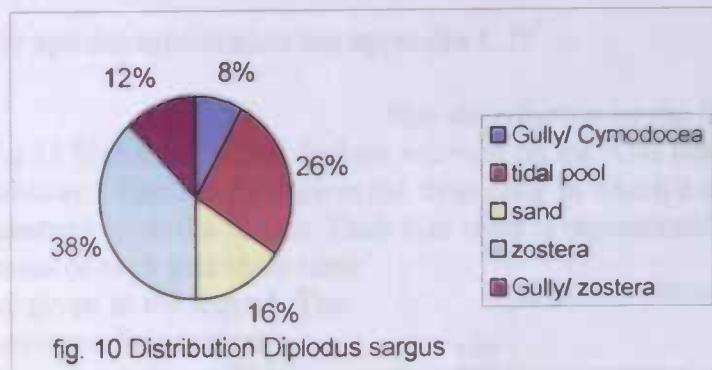


Fig 10 is a standard pie graph of the distribution of the density of *Diplodus sargus* over the different substrates in the area. They are derived from n/m^2 . A total of 110 individuals were caught. 26% of the *Diplodus sargus* are found on the tidal pool substrate with a density of

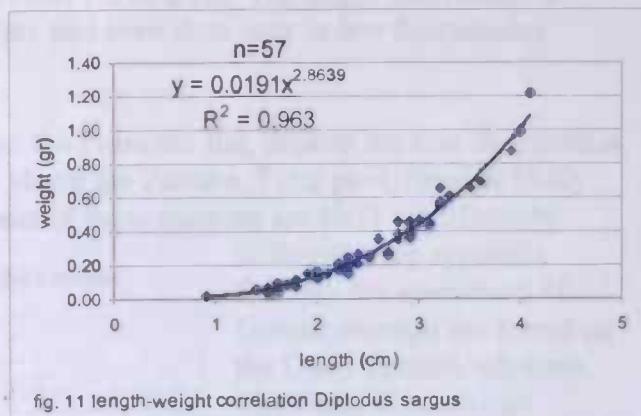
0.019 n/m^2 , an additional 38% was located on Zostera (0.028 n/m^2).

Discussion on distribution on the flats

Diplodus sargus seems to have a preference for the tidal pool and Zostera substrate. The lower percentage of individuals caught on the sand substrate indicates an avoidance of this substrate. The higher percentage of individuals derived from substrates located on the flats opposed to that off the gully substrates indicates that the juveniles avoid the gully substrate during high tide.

Length-weight correlation *Diplodus sargus*

Fig. 11 represents the length-weight correlation of *Diplodus sargus*. The length in cm is depicted on the X-axes and varied between 1 and 4 cm. The weight varied between 0,02 and 1.22 gr. and is depicted on the Y-axes. The line is the best fit through the 57 data points, and it follows the formula $y = 0.0191 \times^{2.8639}$



Summary discussion on *Diplodus sargus*

The average size of the caught individuals indicates that these belong to the juvenile stock of the species. Differences in densities between different substrates seem to indicate a substrate preference for tidal pool and Zostera substrate, whilst there are no size differences detectable between substrates on the flats with the exception of the tidal pool substrate.

Gobius microps

For species information see appendix C.II

Size distribution on the flats

Fig 12 Size distribution *Gobius microps* on the Arie flat, depicts the size distribution per substrate. The Y-axis depicts the frequency in which a certain size class occurs, whilst the substrate is on the X-axis. Each size class is represented by a coloured bar. The outer limits of each size class (cm) are given in the legend. The corresponding numbers above the Zostera, Tidal pool, Sand & Gully Zostera substrate indicate that the means of these samples are NOT significantly different (see appendix B.III.a). The size classes 2 to 2.5 and 2.5 to 3 are the most predominant present size classes on those substrates, frequencies range from 0.30 to 0.60. The highest frequency of 0.7 however is found on the Gully Cymodocea substrate in the size class 1.5 to 2 cm. The larger individuals are only found on the Zostera and Sand substrate and even then only in low frequencies $x<0.05$

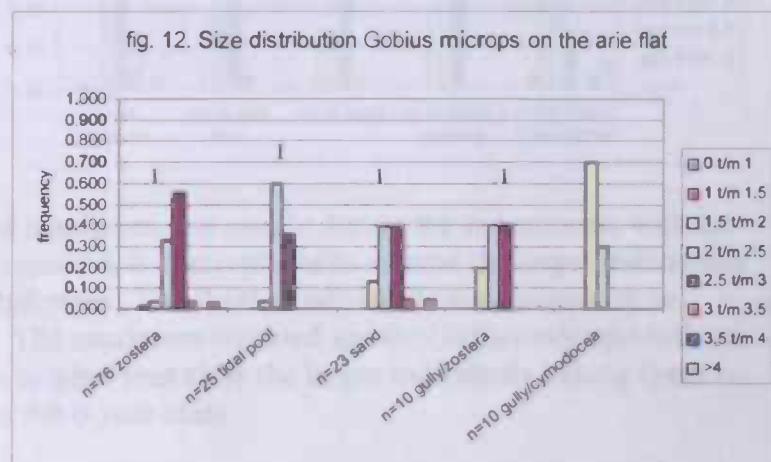
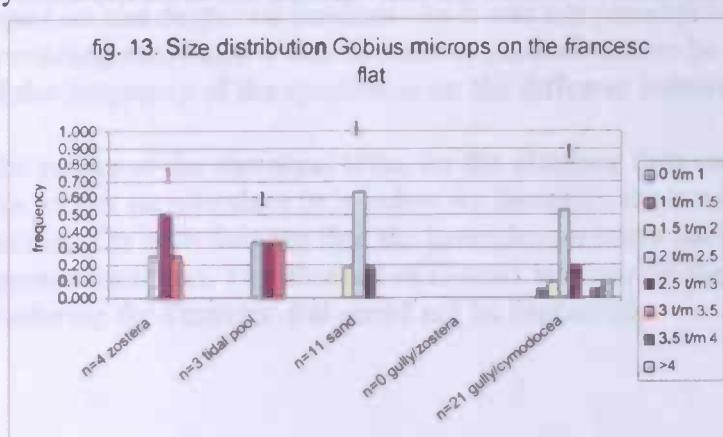


Fig. 13 Size distribution *Gobius microps* on the Francesc flat, depicts the size distribution per substrate. The corresponding numbers above the Zostera, Tidal pool, Sand & Gully Cymodocea substrate indicate that the means of these samples are NOT significantly

different. (See appendix B.III.b). No specimens of *Gobius microps* are found on the Gully Zostera substrate. The Gully Cymodocea substrate is the only substrate where this species is present in the larger size classes.

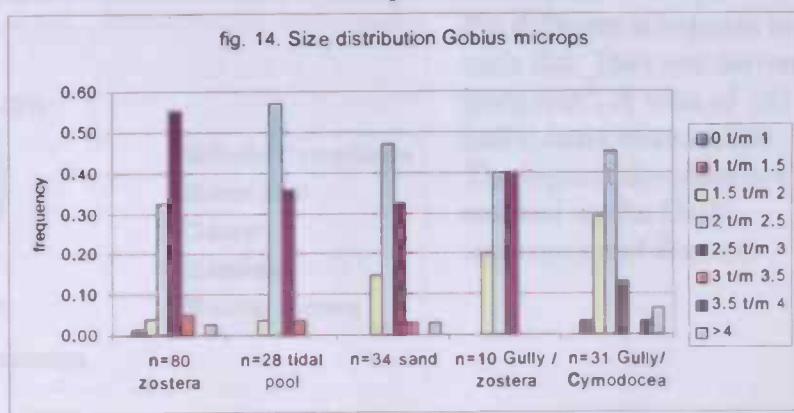


for *Gobius microps*. Only on the gully Cymodocea substrate, after a Yates correction the H_0 (there is no difference between these flats) was rejected, meaning there is a difference in size distribution between these two flats for the gully Cymodocea substrate.

Table 7 to 10 in Appendix B.XX present the results of the χ^2 test for independence

Fig 14 depicts the size distribution of *Gobius microps* after pooling the data, of the two flats. Although there is a visual difference in size classes presented on the different substrates, the corresponding numbers above the substrates indicate that the means of these samples are NOT significantly different. (See appendix B.IV)

Discussion on size distribution on the flats



After comparing the average and maximum size caught during the experiments with the maximum size *Gobius microps* reported, it is acceptable to assume the larger individuals (>3.5) to be derived from the adult stock. The shorter individuals are assumed to be derived from the juvenile stock. The maximum reported age for *Gobius microps* is three years. This leads to the question to what year class the larger individuals belong (year class 1 or 2). Juveniles belong to the 0-year class.

In fig. 13 and 14 we clearly see representatives of both stocks depicted besides each other on the Gully Cymodocea substrate, with the adults in a lower frequency. This decrease in frequency can be expected between different year classes, the older stock is diminished due to death by predation or otherwise. Knowing that the maximum length, 9 cm, is reached as the maximum age is reached, leads to the assumption that the larger individuals caught belong to the first year class.

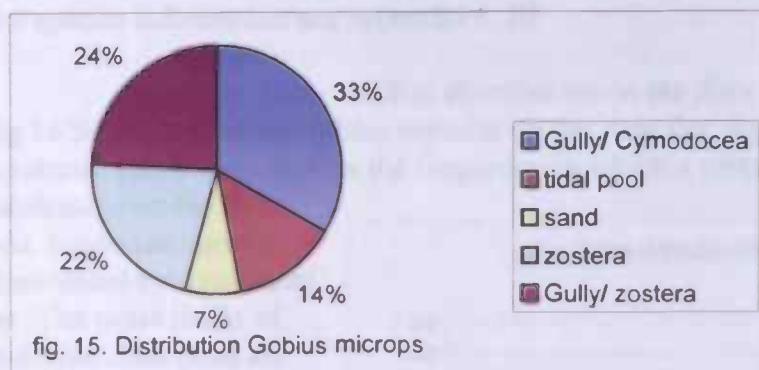
The only found significant variation between the flats, the Gully Cymodocea substrate, is based on one degree of freedom. As it was not possible to reject the H_0 for the four remaining substrates it was decided to pool all data to be able to present a better overview of the frequency of the specimens on the different substrates over the total area.

The power of the statistical tests, for the obtained data on the Francesc flat is rather low due to low sample sizes (n is below 4), therefore these results should be used with caution. On both flats we find the juveniles on every substrate where specimens of this species are found. The absence of *Gobius microps* on the Gully Zostera substrate bordering the Francesc flat could not be explained.

Distribution on the flats

Fig 15 is a standard pie graph of the distribution of the densities of *Gobius microps* over the different substrates on each flat. They are derived from n/m^2 . A total of 183 individuals were caught.

The highest densities are reached on the Gully substrates and Zostera.



Discussion on distribution on the flats

Gobius microps seems to have a preference for gully and Zostera substrates. The lower density of individuals caught on the sand substrate indicates an avoidance of this substrate. The higher density of individuals derived from the gully substrates opposed to those located on the flats indicates that the majority of individuals of this species remain in the Gully during high tide

Summary discussion on Gobius microps

Two-year classes are found during the sampling period, the 0-year class, i.e. the juvenile individuals, the 1-year class, i.e. adult individuals.

There is a difference in size distribution between the flats on the Gully Cymodocea substrate, one of the more preferred substrates of this species. Low densities of *Gobius microps* on the sand substrate seem to indicate an avoidance of this substrate by this species.

Gobius minutus

For species information see appendix C.III

Size distribution on the flats

Fig 16 Size distribution *Gobius minutus* on the Arie flat, depicts the size distribution per substrate. The Y-axis depicts the frequency in which a certain size class occurs, whilst the substrate is on the X-axis. Each size class is represented by a coloured bar. The outer limits of each size class (cm) are given in the legend. The corresponding numbers above the Tidal pool, Gully Zostera & Gully Cymodocea substrate indicate that the means of these samples are NOT significantly different (see appendix B.V.a). The size classes 2 to 2.5 and 2.5 to 3 are the most predominant size classes present on every substrate, frequencies range from 0.30 to 0.45. Although some of the size classes above 4.5 cm are present on the Zostera substrate the frequency of their occurrence is negligible (<0.01). The larger individuals are relatively more predominant ($0.01 < x < 0.05$) on the Tidal pool, Gully Zostera & Gully Cymodocea. This is the greatest difference between those three substrates and the Zostera and Sand substrate. The smaller size classes are located on all substrates, not even relatively more abundant on the Zostera and Sand substrates.

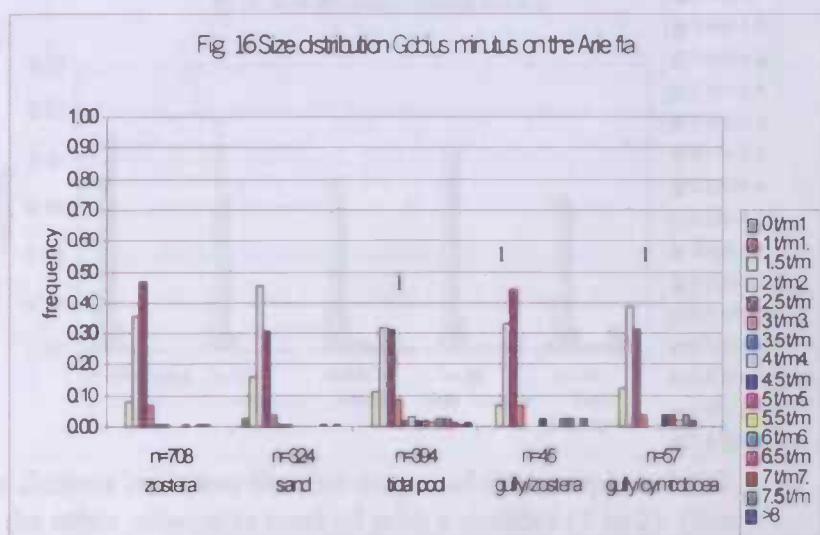
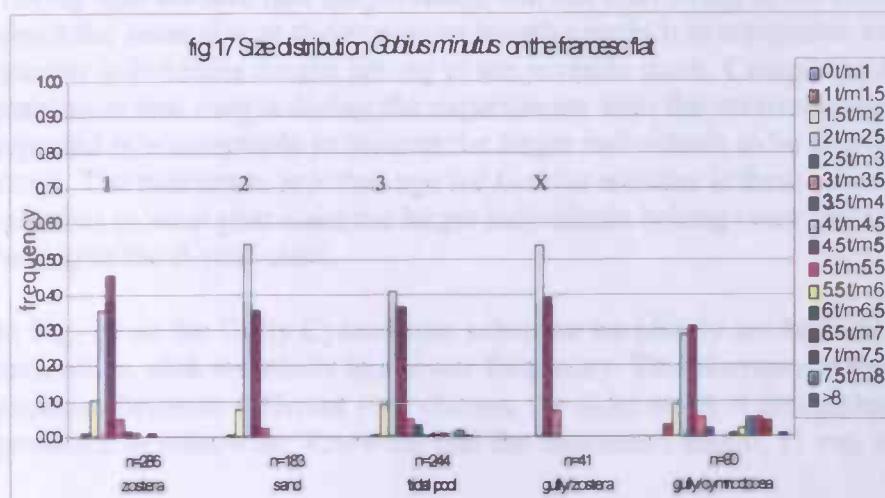


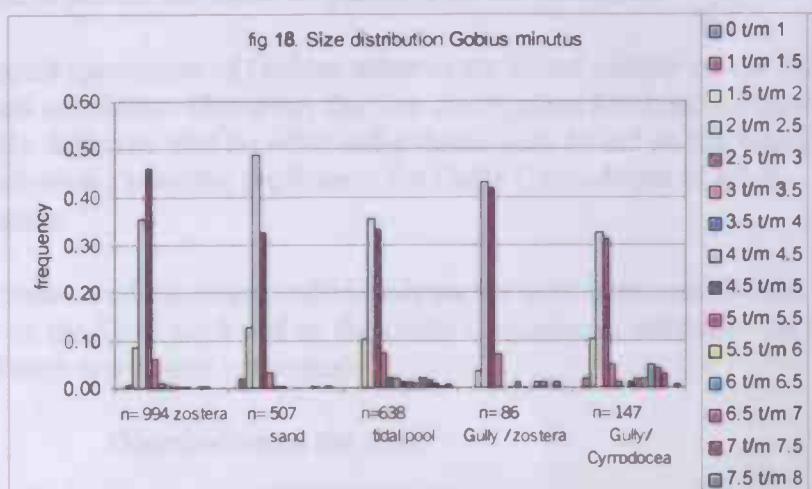
Fig. 17 Size distribution *Gobius minutus* on the Francesc flat, depicts the size distribution per substrate. The X above Gully Zostera indicates that the means of this sample is NOT significantly different from the other substrates marked with a number (1 to 3). (See appendix B.V.b) However the different



numbers indicate that the means of these substrates are significantly different from each other. The size classes 2 to 2.5 and 2.5 to 3 are the most predominant present size classes on every substrate, frequencies range from 0.29 to 0.55. Although some of the size classes above 4.5 cm are present on the *Zostera* substrate the frequency of their occurrence is negligible (<0.01). The larger individuals are relatively more abundant ($0.01 < x < 0.07$) on the Tidal pool & Gully *Cymodocea*. No individuals larger than 3.5 cm were located on the Gully *Zostera* substrate.

Table 11 to 15, see Appendix B.XXI, present the results of the χ^2 test for independence for *Gobius minutus*. The hypothesis that there is no size difference between the two flats cannot be rejected. Fig 18 presents the size distribution of *Gobius minutus* within

the area. The X above Gully Zostera indicates that the means of this sample is NOT significantly different from the other substrates marked with a number (1 to 2). (See appendix B.VI)



Discussion on size distribution on the flats

The absence and low abundance of the size classes 0 to 1 cm and 1 to 1.5 cm is also induced by the biology of these species. The used beam trawl is designed to catch the individuals living near or on the bottom. The juveniles of *Gobius minutus* will only start to live at the bottom as they are about 1.7 to 1.8 cm long. (See appendix C.III)

Taking into account that the juveniles will not start living at the bottom until they are about the same size as the minimum length caught it is acceptable to assume that the smaller individuals caught belong to the juvenile stock. Comparing the average and maximum size caught during the experiments with the maximum size of *Gobius minutus* reported it is acceptable to assume the larger individuals to be derived from the adult stock. The maximum reported age for *Gobius minutus* is three years. This leads to the question to what year class the larger individuals belong (year class 1 or 2). Juveniles belong to the 0-year class.

In Fig. 18 on the Gully *Cymodocea* substrate we clearly see both stocks depicted besides each other, with the adults in a lower frequency. This decrease in frequency can be expected between different year classes, the older stock is diminished due to death by predation or otherwise. Knowing that the maximum length, 11 cm, is reached as the

maximum age is reached, leads to the assumption that the larger individuals caught belong to the first year class.

On the Arie flat the adult specimens of *Gobius minutus* are found mostly on the tidal pool, Gully Cymodocea & Gully Zostera substrates. No differences between these substrates were detected statistically. The juvenile specimens of *Gobius minutus* are present on all substrates, and there doesn't seem to be a preference for any substrate type as the juveniles are present in almost the same frequencies on the substrates.

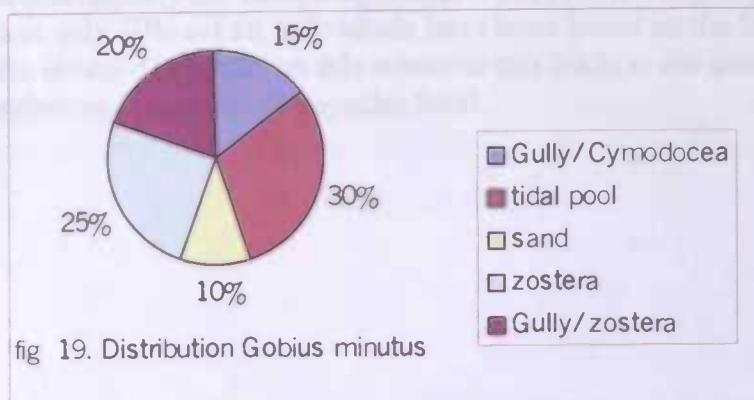
On the Francesc flat the adult specimens of *Gobius minutus* are found mostly on the tidal pool and Gully Cymodocea substrates. However, the size distribution for these substrates on this flat are significantly different. But no adult individuals were found on the Gully Zostera substrate. This indicates a possible preference for Gully Cymodocea of adult specimens over Gully Zostera.

On both flats we find an absence of the larger individuals on the sand substrate. Whilst they seem to concentrate on the Tidal pool and on the Gully Cymodocea substrate. On the Zostera substrate we find very few larger individuals.

Distribution on the flats

Fig 19 is a standard pie graphs of the distribution of the densities of *Gobius minutus* over the different substrates on the flat, derived from n/m^2 . A total 2372 of individuals of this species were caught during the research. 30% of the individuals were found on the tidal pool in a density of $0.6 n/m^2$.

Combined with the 25 % ($0.5 n/m^2$) on the Zostera..

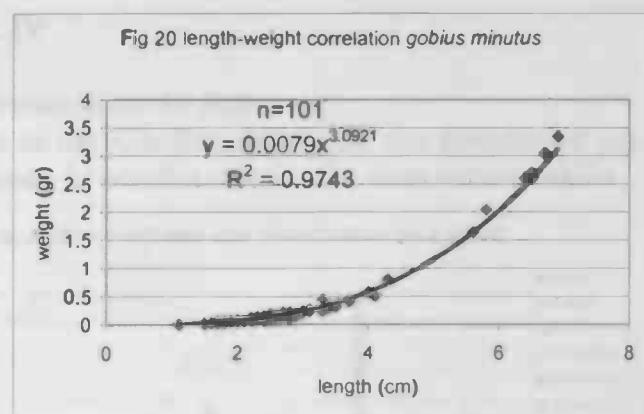


Discussion on distribution on the flats

The distribution of *Gobius minutus* indicates that this species seems to prefer substrates on the flats above those in the gully.

Length-weight correlation Gobius minutus

Fig 20 represents the length weight correlation of *Gobius minutus*. The length in cm is depicted on the X-axes and varied between 1 and 4 cm. The weight varied between 0.01 and 3.50 gr. and is depicted on the Y-axes. The line is the best fit through the 101 data points, and it follows the formula $y = 0.00079 X^{3.0921}$



Summary discussion on Gobius minutus

Two-year classes are found during the sampling period, the 0-year class, i.e. the juvenile individuals, and the 1-year class, i.e. adult individuals.

The older specimens seem to prefer the tidal pool substrate and both the Gully substrates above the Zostera and tidal pool substrate. Juveniles are found on all five substrates in approximately the same frequencies. However looking at the species distribution, we find that only 10% off all individuals have been found on the Sand substrate. Combined with the absence of adults on this substrate this leads to the assumption that this type of substrate is avoided at a species level.

Liza falcipinnes

For species information see appendix C.IV

Size distribution on the flats

Fig 21 Size distribution *Liza falcipinnes* on the Arie flat, depicts the size distribution per substrate. The Y-axes depicts the frequency in which a certain size class occurs, whilst the substrate is on the X-axes. Each size class is represented by a coloured bar. The outer limits of each size class (cm) are given in the legend. The corresponding numbers above the Tidal pool, Zostera & Sand substrate indicate that the means of these samples are NOT significantly different (see appendix B.VIIa).

The size classes 2.6 to 2.9 is the most predominant present size class, frequency's range from 0.25 to 0.58. On the Sand only one individual has been located

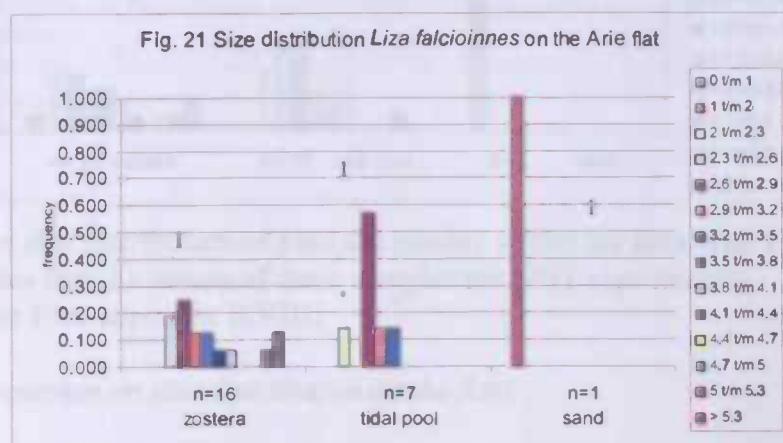
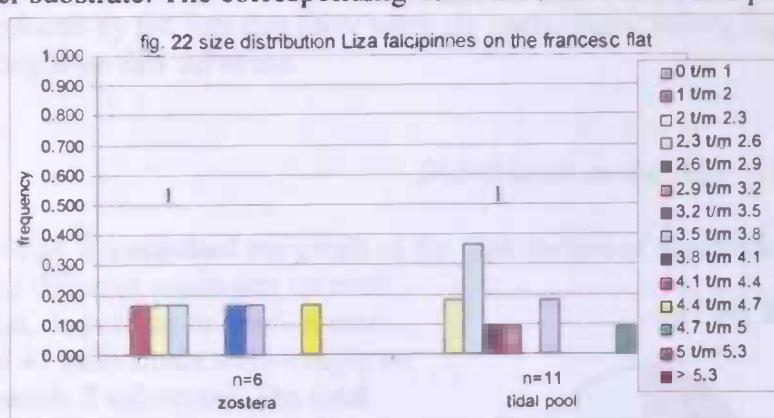


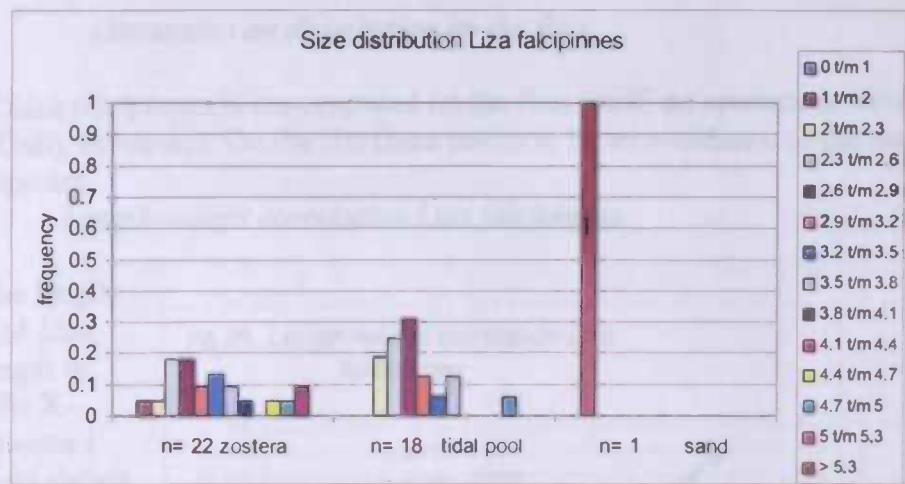
Fig. 22 Size distribution *Liza falcipinnes* on the Francesc flat; depicts the size distribution per substrate. The corresponding numbers above the Tidal pool & Zostera substrate



indicate that the means of these samples are NOT significantly different (see appendix B.VIIb). On the Zostera substrate the frequencies seem evenly distributed between the different size classes. Whilst the size class 2.6 to 2.9 seems to be the most abundant size class on the Tidal pool

substrate.

Table 16 and 17, see Appendix B.XXII, present the results of the χ^2 test for independence for *Liza falcipinnes*. The hypothesis that there is no size difference between the two flats cannot be rejected. Fig 23 presents the size distribution of *Liza falcipinnes* within the area. The 1 above the substrates indicates that the means of these samples are NOT significantly different from each other (See appendix B.VIII)



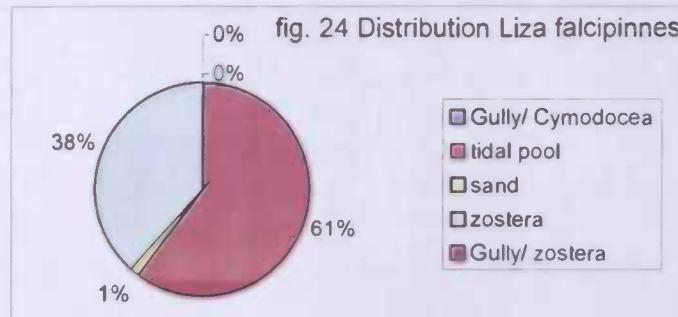
Discussion on size distribution on the flats

After comparing the average and maximum size caught during the experiments with the maximum size of *Liza falcipinnes* reported it is acceptable to assume the individuals to be derived from the juvenile stock.

The power of the statistical tests is rather low, due to low sample sizes (n is between 1 and 16), therefore these results should be used with caution. The seemingly evenly distribution of size classes on the Zostera substrate of the Francesc flat is primarily induced by the fact that there were six individuals, belonging to six different size classes caught on this substrate.

Distribution on the flats

Fig 24 is a standard pie graph of the distribution of the densities of *Liza falcipinnes* over the different substrates on each flat, derived from n/m^2 . A total of 41 individuals were caught on mainly 2 substrates. The tidal pool substrate (0.017 m^{-2}) is by far the most preferred substrate. No individuals were caught on the gully substrates.



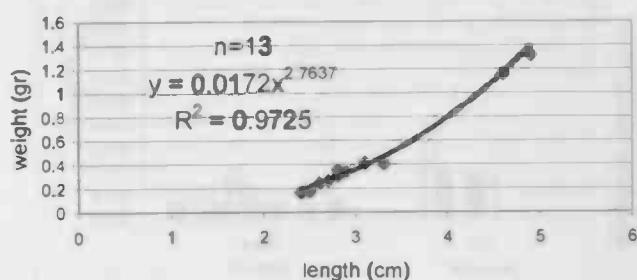
Discussion on distribution on the flats

The distribution of *Liza falcipinnes* is concentrated on the flats itself, no specimens have been found on the Gully substrates. On the flat there seems to be an avoidance of the sand substrate by these species.

Length-weight correlation Liza falcipinnes

Fig 25 represents the length weight correlation of *Liza falcipinnes*. The length in cm is depicted on the X-axes and varied between 1 and 5 cm. The weight varied between 0.2 and 1.39 gr. and is depicted on the Y-axes. The line is the best fit through the 13 data points, and it follows the formula $y = 0.0172 X^{2.7037}$

fig 25. Length-weight correlation *Liza falcipinnes*



Summary discussion on Liza falcipinnes

Liza falcipinnes has only been caught on substrates situated on the flats itself. The size of the caught individuals indicates that these specimens belong to the juvenile stock. Only one individual has been caught on the sand substrate.

This all indicates an avoidance of juvenile *Liza falcipinnes* for both the Gully and the Sand substrates. No statistical differences in average length have been found between the substrates on either flat or between the flats. Though low sample sizes make it dangerous to conclude anything on the size distribution itself.

Mugil cephalus

For species information see appendix C.V

Size distribution on the flats

Fig 26 Size distribution *Mugil cephalus* on the Arie flat, depicts the size distribution per substrate. The Y-axes depict the frequency in which a certain size class occurs, whilst the substrate is on the X-axes. Each size class is represented by a coloured bar. The outer limits of each size class (cm) are given in the legend. The corresponding numbers above the substrates indicate that the means of these samples are NOT significantly different (see appendix B.IXa). Only on the tidal pool and Zostera substrate individuals of this species were caught. On the Zostera substrate ($n=14$) the size class 2.9 to 3.2 cm is the most predominant with a frequency of 0.21. This size class is not represented on the Tidal pool ($n=5$) where the size class 2.3 to 2.6 cm is the most predominantly present in a frequency of 0.4.

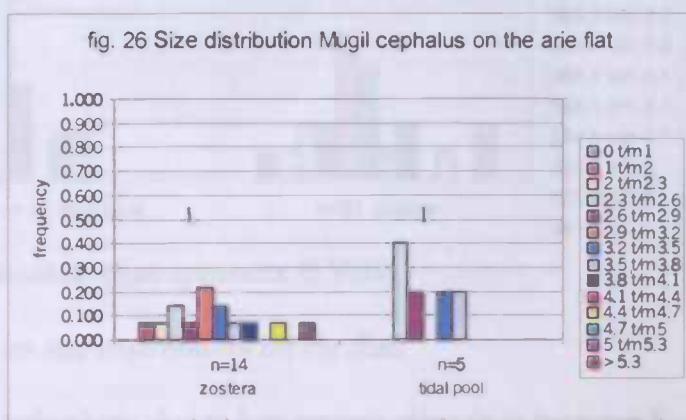


Fig. 27 Size distribution *Mugil cephalus* on the Francesc flat, depicts the size distribution per substrate. The absence of numbers above the substrates indicates that the means of

these samples are significantly different from each other. (See appendix B.IXb). Both the size classes 2.9 to 3.2 cm and 3.2 to 3.5 cm are the most abundant on the Zostera substrate with a frequency of 0.29. On the Tidal pool substrate neither of these size classes has been found. Here the size classes 2 to 2.3 cm and 2.3 to 2.6 cm are the most abundant (frequency is 0.41).

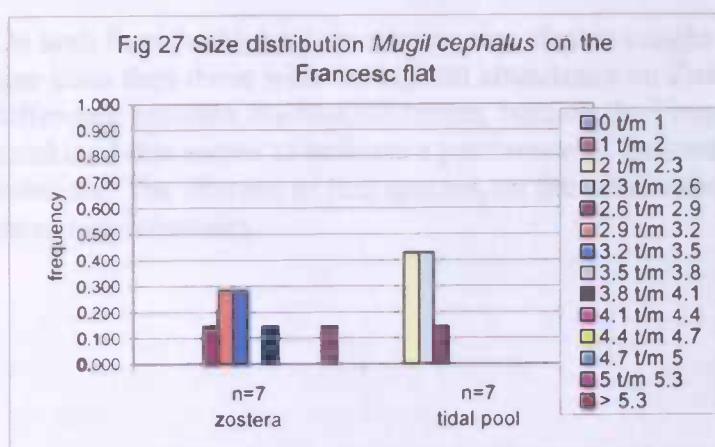
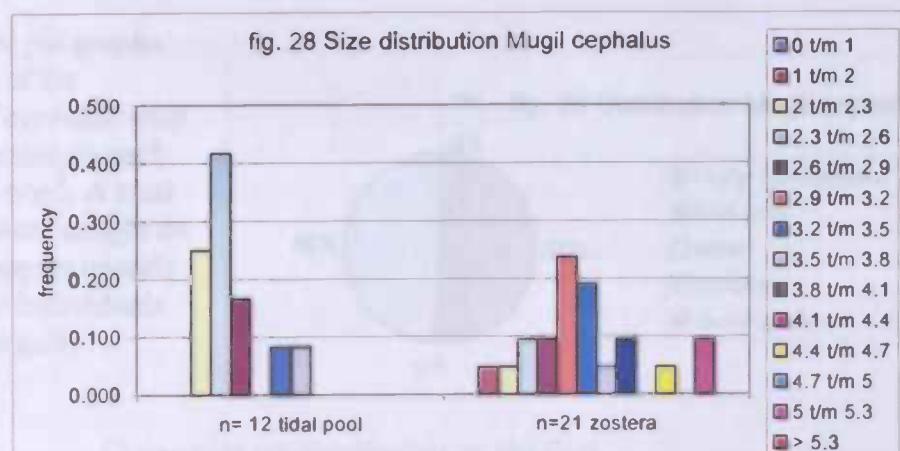


Table 18 and 19, see Appendix B.XXIII present the results of the χ^2 test for independence for *Mugil cephalus*. The hypothesis that there is no size difference between the two flats cannot be rejected. Fig 28 presents the size distribution of *Mugil cephalus* within the area. The absence of numbers above the substrates indicates that the means of these samples are significantly different from each other. (See appendix B.VIII)



Discussion on size distribution on the flats

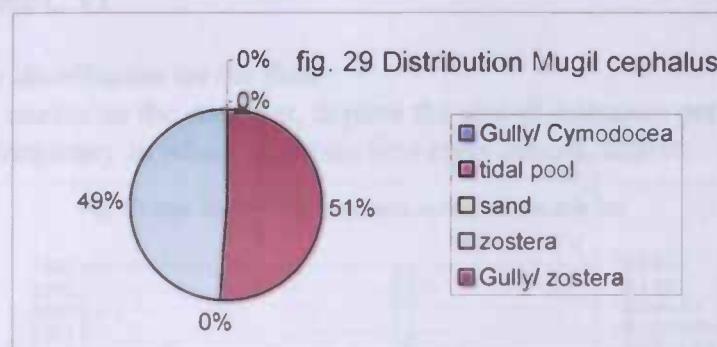
The power of the statistical tests is rather low, due to low sample sizes (n is between 5 and 7), therefore these results should be used with caution.

After comparing the size of the individuals caught with the maximum size reported (120-cm see appendix C.V) it is acceptable to assume the specimens caught to be derived from the juvenile stock. The relatively small differences in length seem to indicate that these individuals belong to the same year class.

On both flats the highest abundance size classes caught in the tidal pool is of a smaller size class than those with the highest abundance on Zostera. Combined with the statistical difference between the two substrates, both on the Francesc flat and when both flats are combined this seems to indicate a preference of the smallest individuals for the Tidal pool substrate. The absence of this species, on the other substrates indicates a preference for these two substrates.

Distribution on the flats

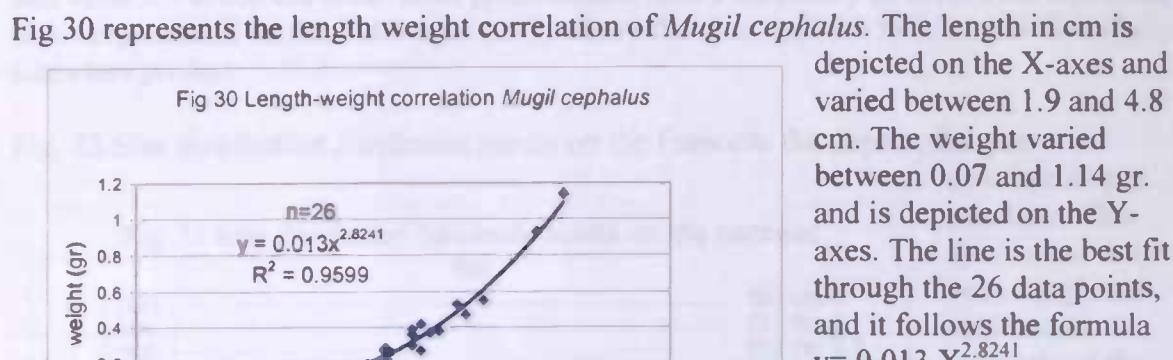
Fig 29 is a standard pie graphs of the distribution of the densities of *Mugil cephalus* over the different substrates on each flat. Derived from n/m^2 . A total of 33 individuals were caught on 2 substrates with approximately equal densities. No individuals were caught on the gully substrates



Discussion on distribution on the flats

The distribution of *Mugil cephalus* does not show clear differences on the flats. Although the abundance on Zostera is slightly lower these differences are negligible.

Length-weight correlation *Mugil cephalus*



Summary discussion on *Mugil cephalus*

All individuals caught belong to the juvenile stock. Small differences in abundance on the different substrates are negligible. The species clearly prefers the tidal pool and Zostera substrates above other three substrates.

Low sample numbers indicate that this data should be used with care. Though there is a detectable difference between the substrates when the flats are combined. This difference seems to indicate that the smaller juveniles prefer the tidal pool substrate.

Sardinella aurita

For species information see appendix C.VI

Size distribution on the flats

Fig 31 Size distribution *Sardinella aurita* on the Arie flat, depicts the size distribution per substrate. The Y-axes depicts the frequency in which a certain size class occurs, whilst the substrate is on the X-axes. Each size class is represented by a coloured bar. The outer limits of each size class (cm) are given in the legend. The corresponding numbers above the substrates indicate that the means of these samples are NOT significantly different (see appendix B.XI). On the Zostera substrate ($n=13$) the size class 2.3 to 2.6 cm is the most predominant with a frequency of 0.31. This size class is not represented on the Tidal pool ($n=1$) where the size class 2.0 to 2.3 cm is the only size class present.

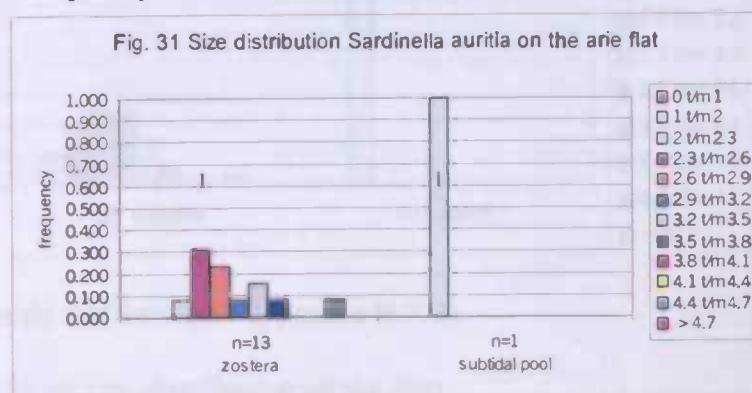


Fig. 32 Size distribution *Sardinella aurita* on the Francesc flat depicts the size

distribution per substrate. This species has only been caught on the Zostera substrate of the Francesc flat ($n=20$) and the Size class 2.9 to 3.2 cm is the most predominant size class on this flat with a frequency 0.35.

Fig. 32 Size distribution *Sardinella aurita* on the francesc flat

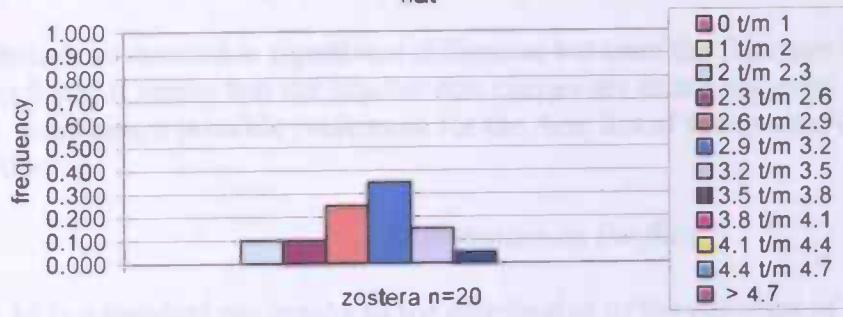
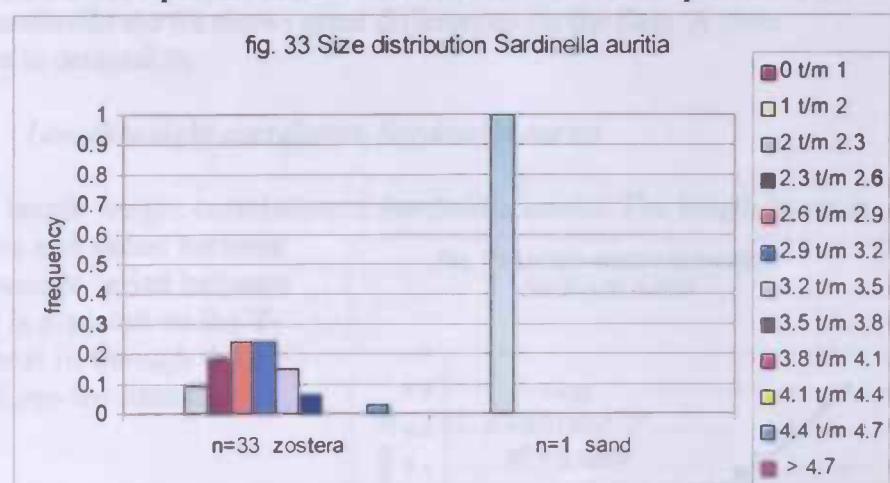


Table 20, see Appendix B.XXIV present the results of the χ^2 test for independence for *Sardinella aurita*.

The hypothesis that there is no size difference between the two flats cannot be rejected. Fig 33 presents the size distribution of *Sardinella aurita* within the area. The corresponding numbers above the substrates indicate that the means of these samples are NOT significantly different (see appendix B.XII).



Discussion on size distribution on the flats

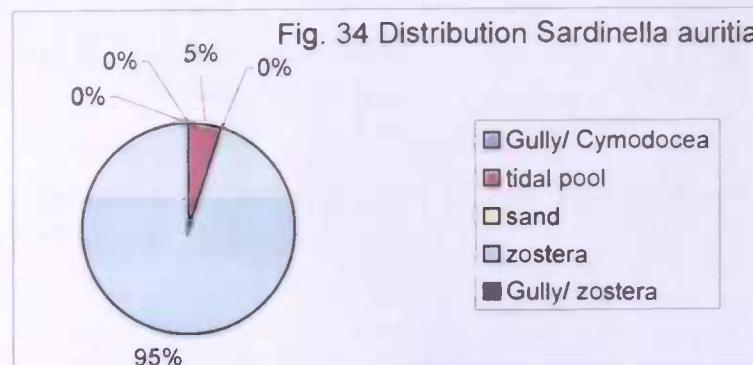
The power of the statistical tests is rather low, due to low sample sizes (n is 1), therefore these results should be used with caution.

After comparing the size of the individuals caught with the maximum size reported (31-cm see appendix C.VI) it is acceptable to assume the specimens caught to be derived from the juvenile stock. The relatively small differences in length seem to indicate that these individuals belong to the same year class.

Although no detectable significant difference between the flats, nor the substrates has been found it seems that the smaller size classes are relatively more common on the Arie flat, indicating a possible preference for the Arie flat of the smaller individuals of this species.

Distribution on the flats

Fig 34 is a standard pie graphs of the distribution of the densities of *Sardinella aurita*



over the different substrates on each flat, derived form n/m^2 . A total of 35 individuals were caught on 2 substrates, 95% is caught on the Zostera substrate in a density of $0.018 n/m^2$. No individuals were caught on the Gully substrates.

Discussion on distribution on the flats

The distribution of *Sardinella aurita* shows great differences on the flats. A clear preference for *Zostera* is detectable.

Length-weight correlation Sardinella aurita

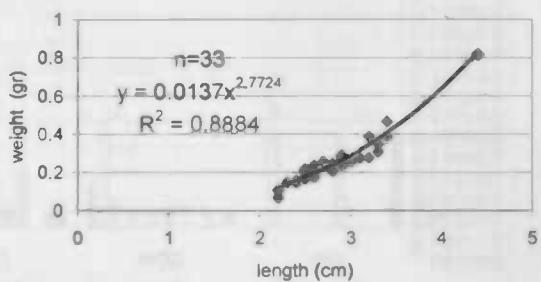
Fig 35 represents the length weight correlation of *Sardinella aurita*. The length in cm is depicted on the X-axes and varied between 2.2 and 4.4 cm. The weight varied between 0,07 and 0.82 gr. and is depicted on the Y-axes. The line is the best fit through the 33 data points, and it follows the formula $y = 0.0137 X^{2.7724}$

Summary discussion on Sardinella aurita

All individuals caught belong to the juvenile stock. Neither in size classes between the substrates, nor between the flats significant differences were detected.

However the distribution of this species indicates a preference for the *Zostera* substrate on the flat.

Fig. 35 Length-weight correlation
Sardinella aurita



Solea senegalensis

For species information see appendix C.VII

Size distribution on the flats

Fig 36 Size distribution *Solea senegalensis* on the Arie flat, depicts the size distribution per substrate. The Y-axes depict the frequency in which a certain size class occurs, whilst the substrate is on the X-axes. Each size class is represented by a coloured bar. The outer limits of each size class (cm) are given in the legend. The X above the tidal pool substrate indicates that the means of this sample is NOT significantly different from the other substrates marked with a number (1 to 2). (See appendix B.XIII.a)

However the different numbers indicate that the means of these substrates are significantly different from each other. On the Zostera substrate ($n=15$) the size classes 4.5 to 5 cm and 6 to 6.5 cm are the most predominant with a frequency of 0.20. On the sand substrate ($n=20$) the size class 1.5 to 2 cm is the most abundant. Other size classes on both substrates are about the same frequency between 0.05 and 0.1. On the tidal pool three individuals were caught in different size classes.

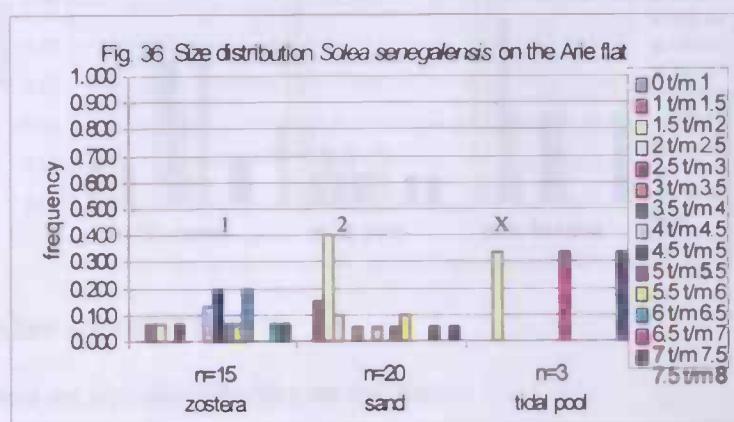
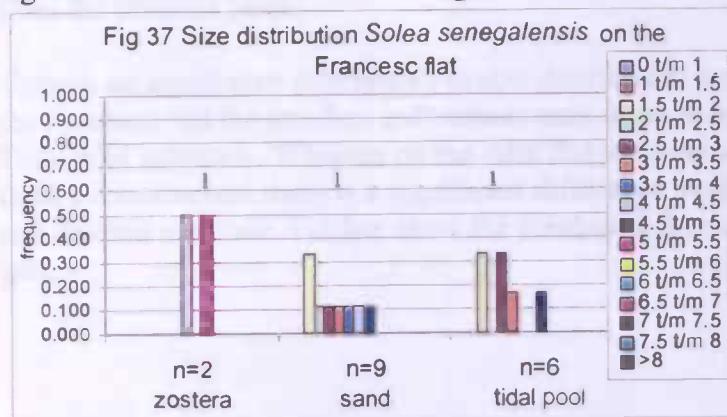


Fig. 37 Size distribution *Solea senegalensis* on the Francesc flat, depicts the size

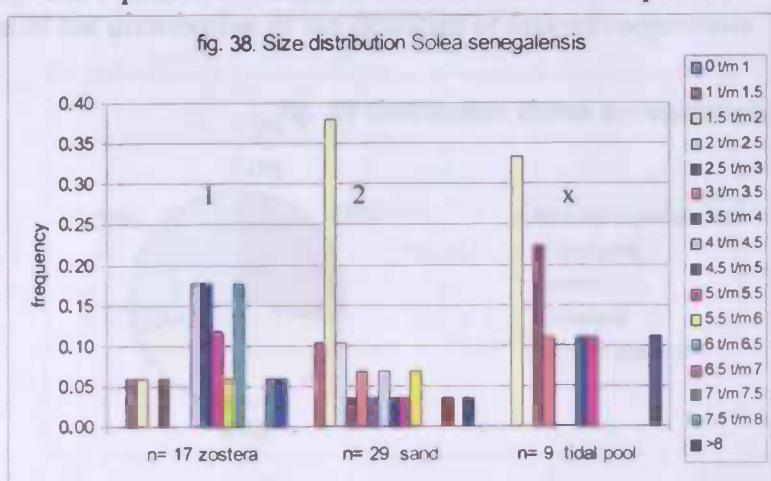


substrate ($n=9$) the size class 1.5 to 2 cm is the most predominant size class with a frequency of 0.33.

distribution per substrate. The corresponding numbers above the Tidal pool, Zostera & Sand substrate indicate that the means of these samples are NOT significantly different (see appendix B.XIII.b). On the Zostera substrate of the Francesc flat only two individuals in different size classes were caught. On the Sand

Table 21 to 23, see Appendix B.XXV present the results of the χ^2 test for independence for *Solea senegalensis*.

The hypothesis that there is no size difference between the two flats cannot be rejected. Fig 38 presents the size distribution of *Solea senegalensis* within the area. The X above the tidal pool substrate indicates that the means of this sample is NOT significantly different from the other substrates marked with a number (1 to 2). (See appendix B.XIV)



Discussion on size distribution on the flats

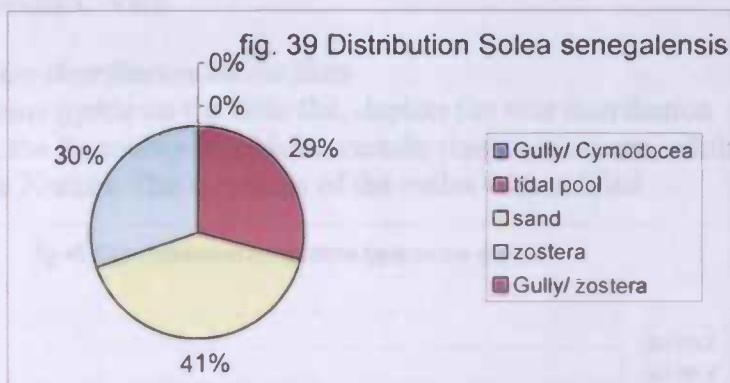
The power of the statistical tests is rather low, due to low sample sizes (n is below 6). Whilst χ^2 test for independence could only be performed on the data derived from the Sand substrate, with 1 degree of freedom and consequently a Yates correction. The absence of individuals in similar size classes on the same substrate leads to pooling. Both on the Zostera and tidal pool substrate this led to one size class therefore these results should be used with caution.

After comparing the size of the individuals caught with the maximum size reported (60-cm see appendix C.VII) it is acceptable to assume the specimens caught to be derived from the juvenile stock.

Though no significant differences in size distribution per substrate could be detected on the Francesc flat the smallest individuals only seem to be derived from the Sand and Tidal pool substrate. Whereas on the Arie flat the smallest individuals are found on all three substrates and there is a significant difference in size distribution between the Sand and Zostera substrate. Further more the combined data suggests the same for the total area.

Distribution on the flats

Fig 39 is a standard pie graphs of the distribution of the densities of *Solea senegalensis* over the different substrates on each flat, derived form n/m^2 . A total of 55 individuals were caught on the three different substrates on the flat. None were derived from the Gully substrates. 41% were found on the sand with a density of $0.012 n/m^2$, whilst the difference between the Zostera and tidal pool substrate is negligible. The density for both substrates is $0.009 n/m^2$.



Discussion distribution on the flats

The distribution of *Solea senegalensis* seems to show differences on the flats. The sand substrate seems to be the most preferred substrate, whilst the gully substrates are avoided.

Summary discussion on Solea senegalensis

All individuals caught belong to the juvenile stock.

The low sample sizes make it impossible to make any assumption about the size distribution of this species on the flats. Though indications of differences between size distribution on Zostera and Sand have been found. The tidal pool substrate doesn't show differences with either of them.

The species seems to avoid the Gully substrates, whilst it seems to prefer the sand substrate on the flat.

Syngnathus typhle

For species information see appendix C.VIII

Size distribution on the flats

Fig 40 Size distribution *Syngnathus typhle* on the Arie flat, depicts the size distribution per substrate. The Y-axes depict the frequency in which a certain size class occurs, whilst the substrates are depicted on the X-axes. The size class of the males with a filled breeding pouch are separately depicted as a frequency of the total individuals caught on that substrate, on the x axes. These are found above the c-substrate columns. Each size class is represented by a coloured bar.

The outer limits

of each size class (cm) are given in the legend. The corresponding numbers above the substrates indicate that the means of these samples are NOT significantly different (see appendix B.XV.a). On all substrates except the Sand the specimens of 8 to 10 cm seem to be the most frequent specimens, followed by the Size class 10 to 12 cm. On the Sand substrate the Size class 6 to 8 cm is the most abundant. The males with breeding pouches are found on all substrates though the frequencies are varying greatly. However, none of those males was shorter than 8 cm.

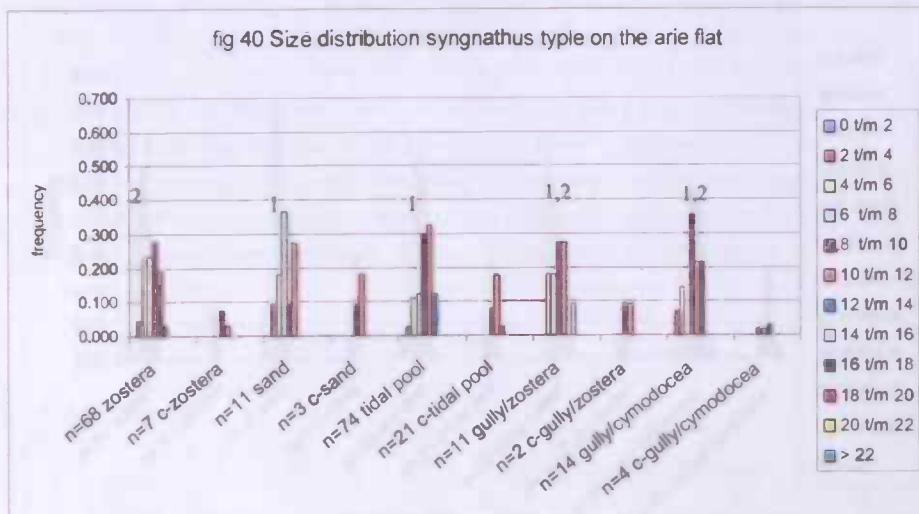
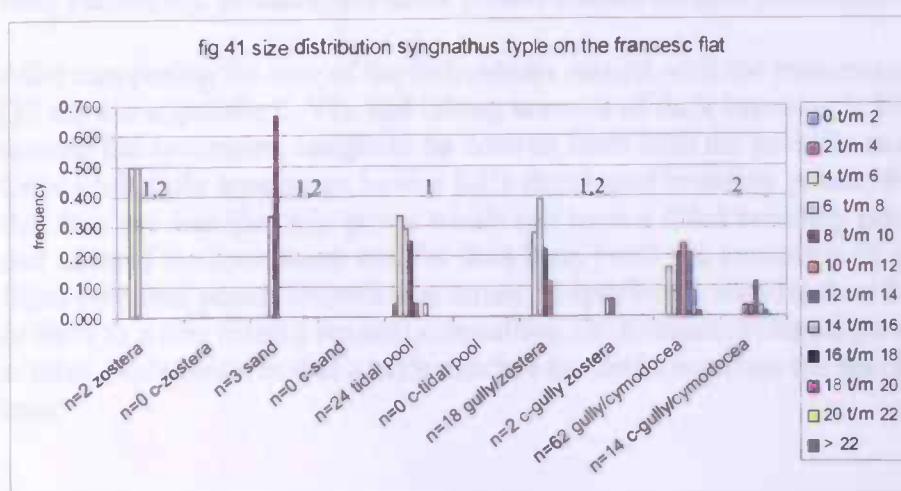


Fig. 41 Size distribution *Syngnathus typhle* on the Francesc flat depicts the size

distribution per substrate. The corresponding numbers above the substrates indicate that the means of these samples are NOT significantly different (see appendix B.XV.b).



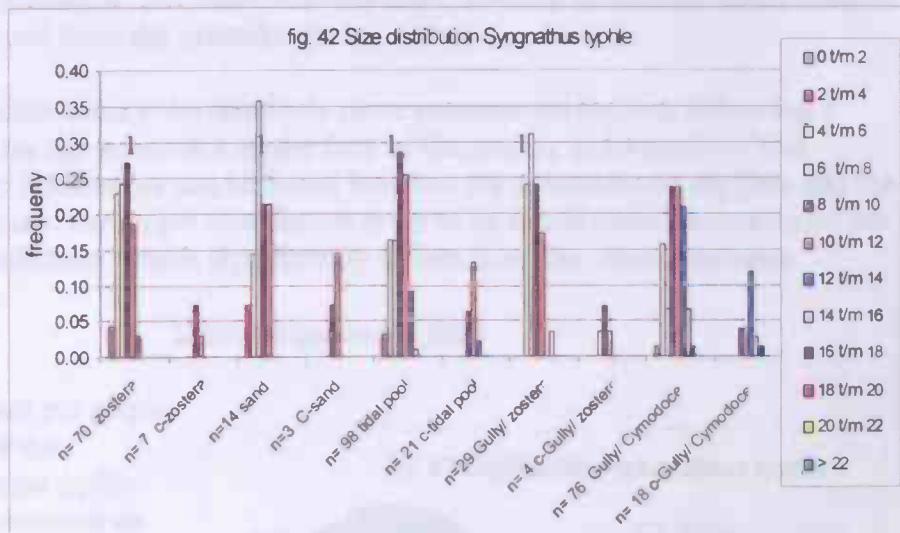
On the substrates on the Francesc flat and on the Gully Zostera substrates in the gully bordering this flat fewer different size classes were detected. Furthermore the size classes smaller than 10 cm are the most frequent. The Gully Cymodocea substrate seems to be the only substrate on this flat where the larger specimens are more predominant. Males with a filled breeding pouch have only been detected on the Gully substrates. Most of them seem to prefer the Gully Cymodocea substrate. With the exception of one individual all males with a filled breeding pouch were longer than 8 cm.

Table 24 to 28, see Appendix B.XXVI present the results of the χ^2 test for independence for *Syngnathus typhle*.

The hypothesis that there is no size difference between the two flats cannot be rejected. Fig 42 presents the size distribution of *Syngnathus typhle* within the area.

The corresponding numbers above

the substrates indicate that the means of these samples are NOT significantly different (see appendix B.XVI). Only on the Gully Cymodocea substrate the means are significantly different.



Discussion on size distribution on the flats

The power of the statistical tests performed on the data derived from the Francesc flat is rather low, due to low sample sizes (n is 3). Furthermore the χ^2 test for independence on the Zostera substrate has only one degree of freedom and therefore a Yates correction has been performed. Nonetheless these results should be used with caution.

After comparing the size of the individuals caught with the maximum size reported (35 cm see appendix C.VI), and taking account of their breeding habits, it is acceptable to assume the specimens caught to be derived from both the juvenile stock and adult stock. Only adult male specimens have a fully developed breeding pouch, from which follows that they are also the only group which can have a filled breeding pouch. From the fact that none of the specimens smaller than 8 cm (with the exception of one individual) had a filled breeding pouch follows that either all specimens smaller than 8 cm were females, or there is a size related sexual competition i.e. females prefer larger males to mate with. A third explanation is that a male reaches his maturity when the specimen is about 8 cm long.

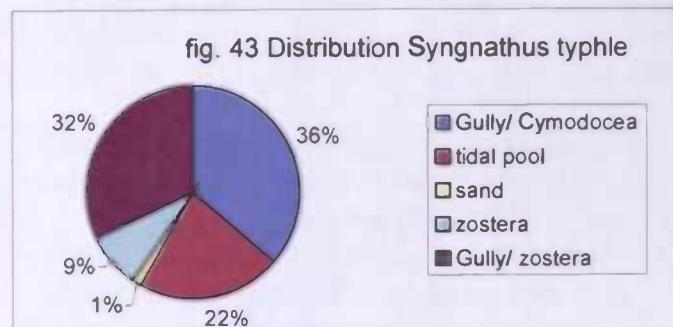
The hypothesis that all individuals smaller than 8 cm are females isn't completely impossible, since many species undergo a sex change at a certain stage in their life. As the individuals were not sexed this possibility cannot be discarded on the grounds of data found here. However it is unlikely that sex changes would only occur in this population of this species.

A size related sexual competition for this species has been found in earlier research. It seems that from about 9 cm upward a male has a significant higher chance to mate (personal comment Dr. J.G. Hiddink.) Although this cannot be discarded this doesn't exclude the third explanation. Therefore one can safely assume those individuals smaller than 6-cm to be derived from the juvenile stock.

The smaller size classes seem to be relatively more common on the flat, indicating a possible preference for the substrates on the flats of the smaller individuals of this species. However no differences can be found between the substrates on the flats and the Gully Zostera substrate. The larger size classes seem to be found more frequently on the Gully Cymodocea substrate, which significantly differs from the other substrates.

Distribution on the flats

In fig. 43 is a standard pie graphs of the distribution of the densities of *Syngnathus typhle* over the different substrates on each flat, derived from n/m^2 . A total of 282 individuals were caught. 36 % of the individuals were derived from the Gully Cymodocea with a density of $0.15 n/m^2$. The difference between the gully Zostera and gully Cymodocea substrate is negligible. The significant density for both substrates differs $0.01 n/m^2$. About the same percentage has been derived from the three substrates on the flats, where the highest abundance was found on the tidal pool substrate ($0.09 n/m^2$).



Discussion on distribution on the flats

The distribution of *Syngnathus typhle* does show differences between the substrates on the flats. Two thirds of the individuals caught were derived from the Gully substrates. Which two seem to be equally preferred above the substrates on the flats. Of those substrates on the flats there seems to be a preference for the tidal pool substrate.

*Summary discussion on *Syngnathus typhle**

Individuals caught belong to both the juvenile and the adult stock. The lower frequency of the larger individuals on the flat and gully *Zostera*, compared with gully *Cymodocea*, combined with the difference in size between these substrates, seems to indicate an avoidance of these substrates by the larger specimens.

Conclusion:

Conclusion general results.

The species richness of this area will be larger than detected during this research. Some temporal visitors, and residents of this region are known but have not been caught by us, whilst others are yet to be identified or even discovered.

It is equally evident that the found densities are an underestimation of the actual density and that in order to make accurate estimations one should design another method in order to catch the specimens belonging to the family of Clupeidae. This would change the figures significantly.

Though neither in the biodiversity, nor in the density results evidence has been found to determine if the species composition on the two different flats differs significantly or not, it is indicated that there are some differences present. Future research could provide a conclusive answer as well as provide an insight in the mechanisms behind these apparent differences.

As to the diet of the found species: the lack of results on gut contents prevents an insight in the trophic level of the individuals caught. It is possible that the juveniles of a species are on a different trophic level than the adult specimens. Data on the gut contents of both adult as well as juveniles is necessary to gain an insight into the energy flow of this area.

The data on relative length change is insufficient, or too varied to provide an adequate tool to estimate average growth on a species level. Though size comparisons between caught individuals and literature indicate that for both *Gobius minutus* and *Diplodus sargus* the specimens caught belong to the juvenile stock, this doesn't mean that the area is a nursery. Neither does the presence of mature male *Syngnathus typhle*, with fully developed breeding pouches. These three species are all three found in different stages of development throughout the area, and thus probably are endemic to the region.

Conclusions on a species level

When comparing the size of individuals caught with sizes in literature almost all individuals caught belong to the juvenile stock of their species. Some of these species will complete their life cycle without ever leaving the boundaries of this tidal flat area. For these species this area cannot be assigned as a nursery. Other species are clearly pelagic species that probably use the area only during the juvenile stages and therefore use this area as a nursery. In the following paragraphs all discussed species will be divided into one of these two groups.

However in order to quantify the importance of the area to the species, as a nursery or habitat more data about the area and the species themselves is needed. Furthermore one should realise that differences in substrate can have far fetching influences. Almost all data used by Kuiper to determine if the Dutch Wadden Sea is a nursery for *Pleuronectes platessa* has been derived from a relatively small area of the Dutch Wadden Sea, the flats bordering the Marsdiep. This after initial results showed that *Pleuronectes platessa* preferred the Sand substrate, which is relatively the most abundant substrate within this area. It is not unlikely that similar areas are present within the Parc National du Banc d'Arguin. Therefore the substrate type that the juveniles seem to prefer will be mentioned. For all species it holds true that these preferences can be induced by a size-related competition, though no clear evidence has been found.

Diplodus sargus

This species can be found in this bay in different stages of its life cycle. During the sampling no adults are caught. However during the sampling period several adults have been caught with a fishing pole by the staff of the research station as an addition to the food supply. This species was said to be a common catch in the gully. Because the species is continuously present throughout the year in all stages of its development it is likely that the Baie d'Aouatif functions as a habitat. The juveniles of the species are present with an average density of 0.01 n/m^2 . Zostera and tidal pool seem to be the more preferred substrate for the juveniles, while they avoid the gully substrates.

Gobius microps

Found individuals belong to either the adult or juvenile stocks, indicating that this species doesn't use the sampling area as a nursery but as a habitat. The larger specimens of this species seem to prefer the Zostera substrates on the flats. The juveniles are mostly found on the Gully *Cymodocea* substrates bordering the flats, whilst there seems to be an avoidance of the sand substrate. The average density in which this species is present is 0.03 n/m^2 .

Gobius minutus

Found individuals belong to either the adult or juvenile stocks, indicating that this species doesn't use the sampling area as a nursery but as a **habitat**. The larger specimens seem to prefer the *Tidal pool* and *Gully Cymodocea* substrates, whilst the 0 year class seems most abundant on the *Zostera* substrate. The 1-year class avoids the sand substrate, the low abundance of the 0-class on this substrate could indicate an avoidance on species level for this substrate. The average density is 0.37 n/m^2

Liza falcipinnis

Found individuals belong to the juvenile stocks. Adults are known to visit estuaries, but reproduction takes place in the sea, indicating that found juveniles have entered the estuary on their own (or due to prevailing currents) and are probably using the area as a **nursery**. These juveniles avoid the gully and sand substrates. The juveniles of the species clearly prefer substrates on the flats. The average density of this species is 0.007 n/m^2

Mugil cephalus

Found individuals belong to the juvenile stocks. Adults are known to visit estuaries, but reproduction is thought to take place in the Senegal river delta, indicating that found juveniles have entered the estuary on their own (or due to prevailing currents) and are probably using the area as a **nursery**. These juveniles avoid the gully and sand substrates. The juveniles of the species clearly prefer substrates on the flats with the smaller individuals more abundant on the *tidal pool* substrate. The average density of this species is 0.005 n/m^2

Sardinella aurita

Found individuals belong to the juvenile stocks. Adults prefer coastal waters, but juveniles are known to remain within nursery areas, indicating that this species uses the area as a **nursery**. The juveniles prefer the substrates on the flats namely the *Zostera* substrate. The average density of this species is 0.006 n/m^2

Solea senegalensis

Found individuals belong to the juvenile stocks. Adults prefer coastal waters, but juveniles are known to remain within nursery areas, indicating that this species uses the area as a **nursery**. The juveniles prefer the substrates on the flats namely the sand substrate. There is a clear avoidance of the gully substrates by these juveniles. The average density of this species is 0.009 n/m^2

Syngnathus typhle

Found individuals are mainly derived from the adult stock, though some juveniles have been caught. Indicating that this species uses the area rather as a **habitat** area than as nursery. For adult males there seems to be a relation between size and reproduction chances. Those specimens found that had a fully developed breeding pouch were all larger males. This species seems to prefer the substrates in the gully bordering the flats. Though indications have been found that larger individuals prefer the gully *Cymodocea* substrate. Although the flats seem to be avoided by this species (only one third is found on the flat), those that are found on the flats seem to prefer the *Zostera* substrate. The average density of this species is 0.047 n/m^2

Main Conclusion

The hypothesis: The Banc d'Arguin has an ecological function as a nursery for juvenile fish, should be accepted. Although none of the data on itself is sufficient to accept this hypothesis, the multitude of juveniles of those species which are known to use estuaries as a nursery makes it hard to conclude otherwise. Further it is important to emphasise that although it is acceptable to qualify the Baie d'Aouatif as a nursery it is far more important to quantify its importance as a potential source. The fact that this bay can be qualified as a nursery doesn't imply that the complete Parc is a nursery. Although it is likely that there are more areas like this within the Parc.

Acknowledgements:

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The aid of Dr. Jan-Geert Hiddink during the start up of the practical phase of this project was indispensable. As well the aid and support provided by Prof. Dr. W. J. Wolff, not only for getting this project from the ground, nor just for the practical support but as well for his insight and patience during the reporting phase.

Almost last but certainly not least I'd like to thank the staff of the Parc National du Banc d'Arguin, at the station in Iwik, as well as those employees of the Parc that visited us their for numerous reasons. Without their aid, dedication and distractions our stay there would have been less agreeable. They managed to give the station a little feeling of home, giving us a little insight into their culture. For this I thank you all; Mr. Mohammed O. Bouceif for inviting us to the congress, Dr. Jean Worms, for his efforts to make this research possible. Eli and Abou, I especially loved our little trip through the desert to Agadir and Nouhadibou, Samba, I keep picturing besides the radio. Fall, always smiling and prepared to help or chat. Hassen, almost always there, if you needed anything or not, even during the feast, You can really cook opa. M'mbareck, for his patience in teaching us some Arabic words. Omar, Always interested in the work, and ready to aid in determining a 'new' found species. Kenny, For all those meals, I had to be careful not to eat my own fingers, I almost gained weight. Achmed, the young fisherman that made bread whilst the baker was on holiday for a month, and a master of tea making. Antonio for the use of his house in Nouackchott and together with Mathieu for their visits, bringing us the highly valued provisions, both in solid and liquid state.

Further I'd like to thank Drs H. van Gestel for all the help he offered on the terrain of computers. Ranging from aquiring additional software necesarry for the research, to replacing crashed hardware (twice). But mostly for retrieving the 'lost' data from the crashed computers.

Finally my gratitude goes out to my two colleagues Hilde Boer and Britta Schaffmeister, without whose aid I'd never been able to get my beam trawl back on board. And everybody else I forgot, in particular those friends whom voluntarily or not, functioned as an outlet for frustrations or ideas during the reporting phase.

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Appendix, Banc d'Arguin a Nursery for fish species

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Appendix A: Figures and Tables.

Appendix A.1: Tables

Sample points

sample point	Northern Latitude	Eastern longitude	Substrate
AGRAS	19.891017,	-16.284650,	Zostera
AGRAS2	19.888450,	-16.286117,	Zostera
APOEL	19.893250,	-16.284517,	Tidal pool
APOEL2	19.889033,	-16.284333,	Tidal pool
AZAND	19.892000,	-16.284733,	Sand
AZAND2	19.889900,	-16.285717,	Sand
BGRAS	19.879050,	-16.284350,	Zostera
BGRAS2	19.876000,	-16.291783,	Zostera
BPGRAS2	19.874483,	-16.289883,	Zostera
BPGRAS	19.874733,	-16.290017,	Zostera
BPOEL	19.878733,	-16.284717,	Tidal pool
BPOEL2	19.876517,	-16.292133,	Tidal pool
BPPOE2	19.874750,	-16.289500,	Tidal pool
BPPOEL	19.875000,	-16.290233,	Tidal pool
BPZAND2	19.875317,	-16.289683,	Sand
BPZAND	19.877000,	-16.289733,	Sand
BZAND	19.879217,	-16.285167,	Sand
BZAND2	19.876167,	-16.292083,	Sand
BZGEUL	19.879775,	-16.288143,	Gully Zostera
CGEUL	19.884556,	-16.290002,	Gully Cymodocea
CYGEUL2	19.888750,	-16.273500,	Gully Cymodocea
CYGEUL	19.877997,	-16.292544,	Gully Cymodocea
GRAS	19.883050,	-16.289533,	Zostera
GRAS2	19.887967,	-16.274133,	Zostera
POEL	19.883067,	-16.289567,	Tidal pool
POEL2	19.888467,	-16.273433,	Tidal pool
ZAND	19.882269,	-16.289707,	Sand
ZAND2	19.888333,	-16.273100,	Sand
ZGEUL	19.888236,	-16.288706,	Gully Zostera
ZGRAS	19.879450,	-16.279467,	Zostera
ZGRAS2	19.880150,	-16.276733,	Zostera
ZPOEL	19.879517,	-16.279150,	Tidal pool
ZPOEL2	19.880450,	-16.277117,	Tidal pool
ZZAND	19.879100,	-16.279233,	Sand
ZZAND2	19.880000,	-16.277217,	Sand

Table 1. Geographical position of the Sample points

Density per substrate

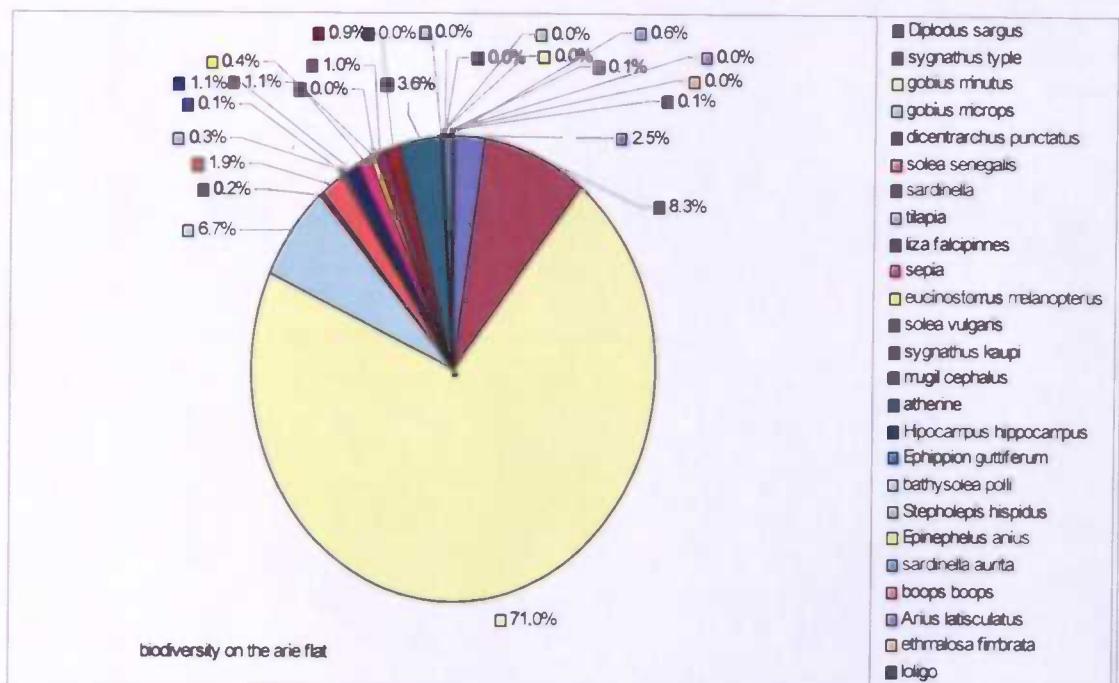
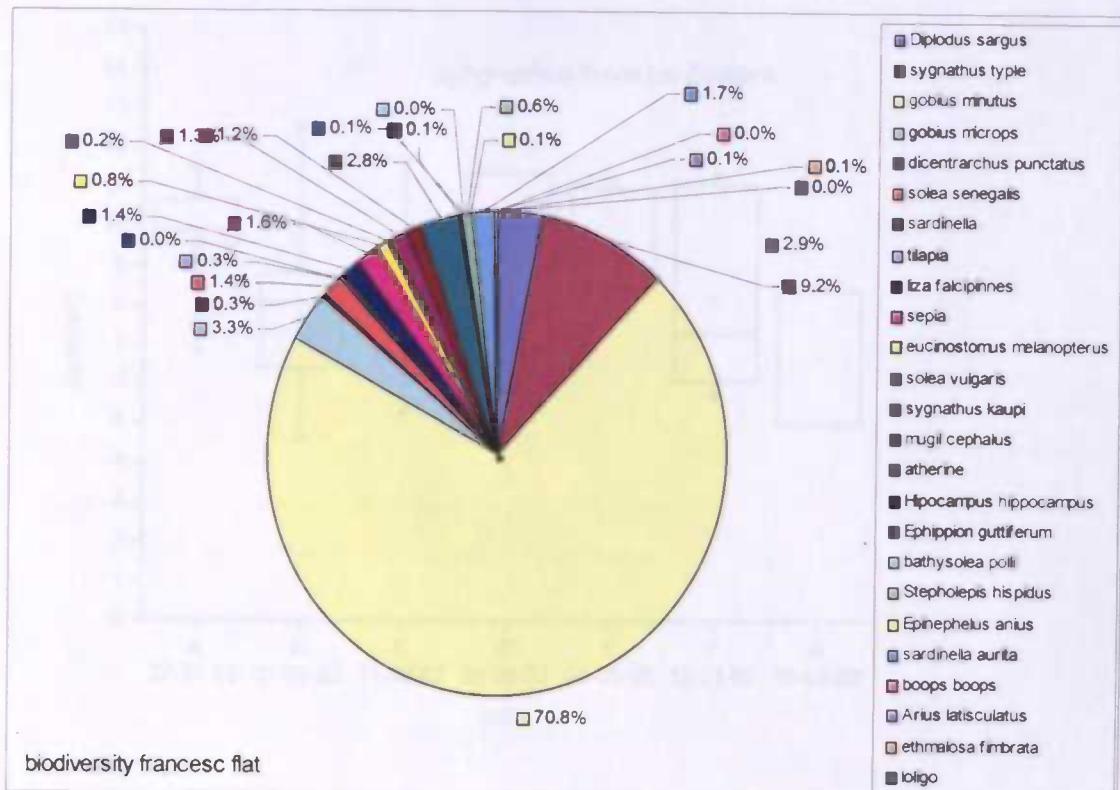
Substrate	Gully Cymnodosea	Subtidal pool	sand	Gully Zostera	Zostera	subtotal flat	total flats
M2 sampled	111.63	634.52	1504.05	108.69	1304.29	3663.19	6139.58
Diplodus sargus	0.0090	0.0063	0.0047	0.0092	0.0307	0.0145	0.0143
Gobius microps	0.0896	0.0394	0.0153	0.0552	0.0613	0.0393	0.0298
Gobius minutus	0.5106	0.6272	0.2154	0.2208	0.5582	0.4179	0.3865
Liza falcipinnis	0.0000	0.0110	0.0007	0.0000	0.0123	0.0066	0.0067
Mugil cephalus	0.0000	0.0079	0.0000	0.0000	0.0107	0.0052	0.0054
Sardinella auratia	0.0000	0.0016	0.0000	0.0000	0.0100	0.0038	0.0055
Solea senegalensis	0.0000	0.0047	0.0133	0.0000	0.0138	0.0112	0.0094
Syngnathus typhle	0.1254	0.1166	0.0073	0.0552	0.0560	0.0486	0.0467

Table 3a: Density on the Arie flat

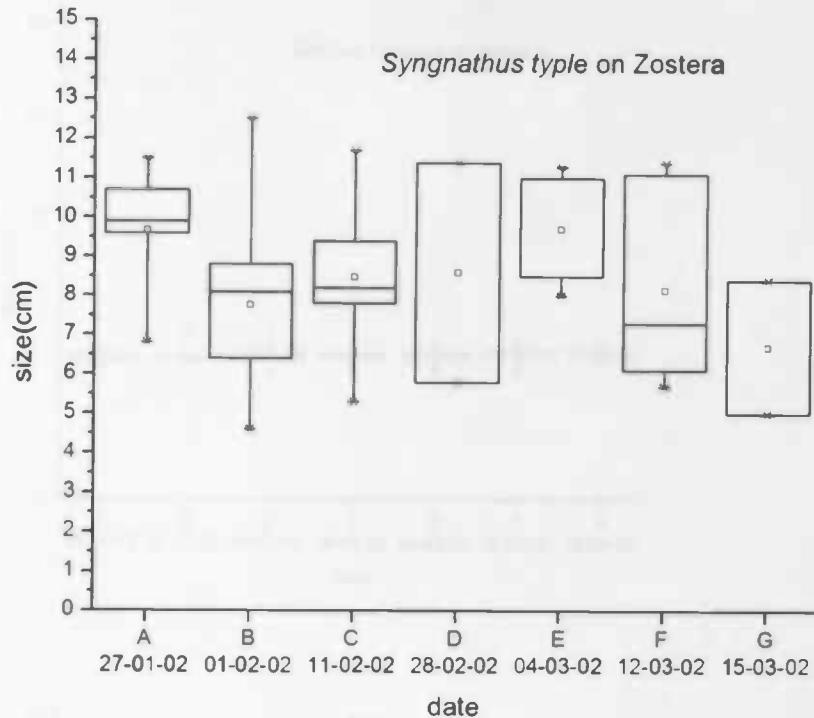
Substrate	Gully Cymnodosea	Subtidal pool	sand	Gully Zostera	Zostera	subtotal flat	total flats
M2 sampled	373.08	423.01	945.91	105.75	628.65	2476.40	6139.58
Diplodus sargus	0.0054	0.0402	0.0000	0.0095	0.0239	0.0141	0.0143
Gobius microps	0.0563	0.0071	0.0116	0.3877	0.0064	0.0157	0.0298
Gobius minutus	0.2412	0.5697	0.1935	0.0189	0.4565	0.3400	0.3865
Liza falcipinnis	0.0000	0.0260	0.0000	0.0000	0.0095	0.0069	0.0067
Mugil cephalus	0.0000	0.0165	0.0000	0.0000	0.0111	0.0057	0.0054
Sardinella auratia	0.0000	0.0000	0.0000	0.0000	0.0318	0.0081	0.0055
Solea senegalensis	0.0000	0.0142	0.0095	0.0000	0.0032	0.0069	0.0094
Syngnathus typhle	0.1662	0.0567	0.0032	0.1702	0.0032	0.0440	0.0467

Table 3b: Density on the Francesc flat

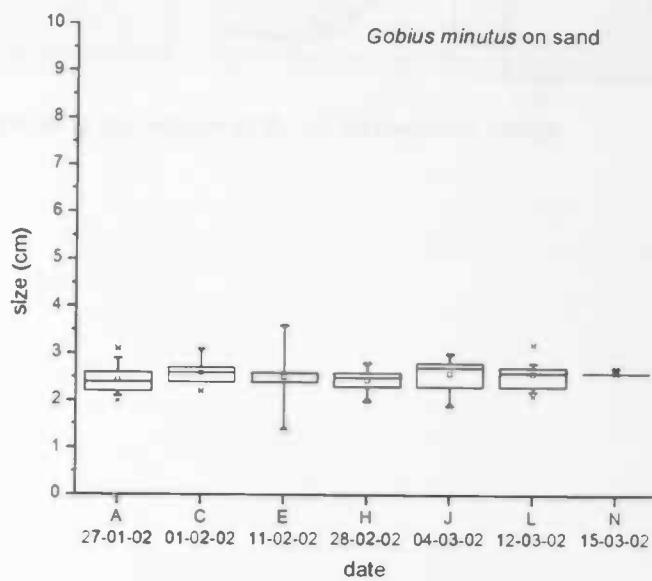
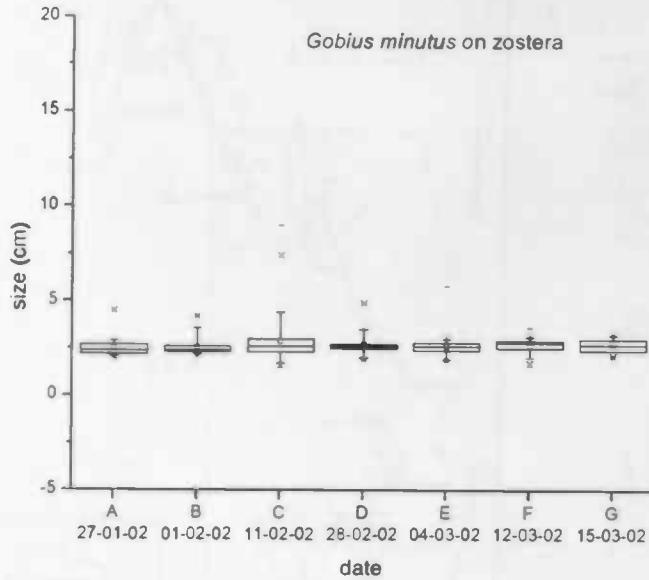
Appendix A.II: Biodiversity on the flats



Appendix A.III: Relative length change *Syngnathus type*

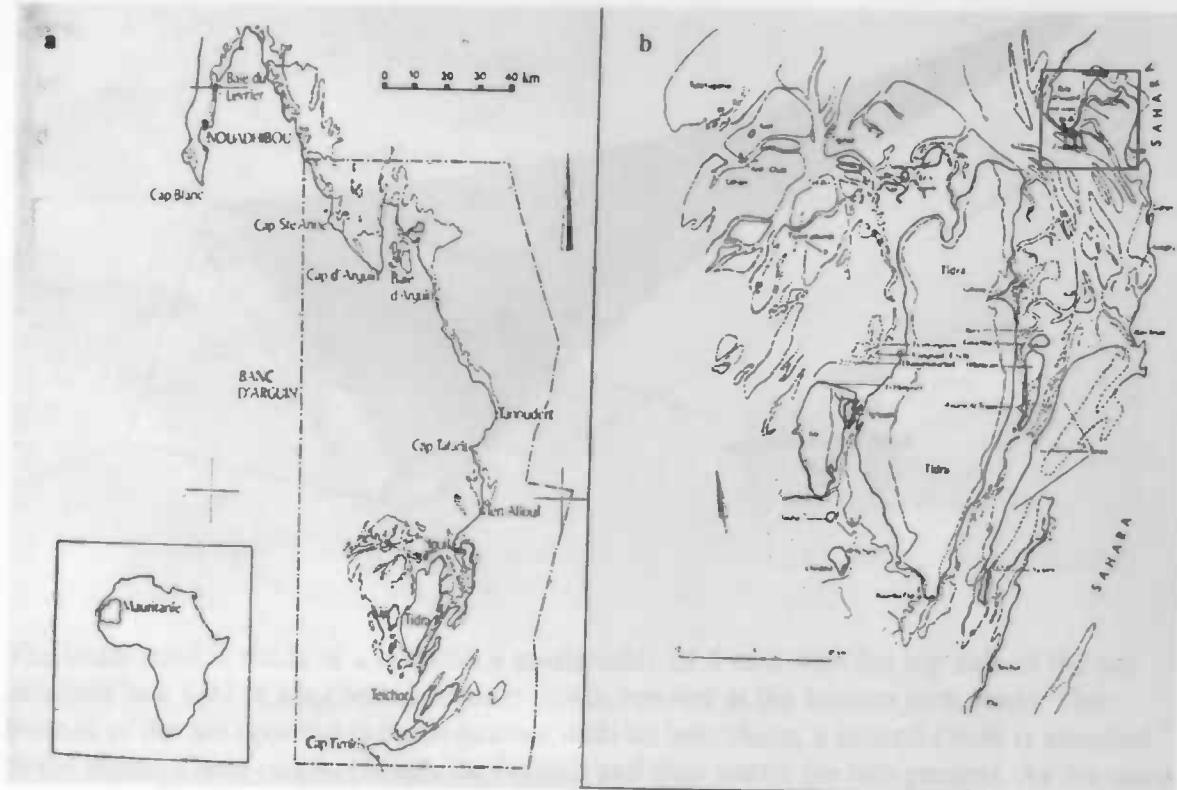


Appendix A.IV: Relative length change *Gobius minutus*



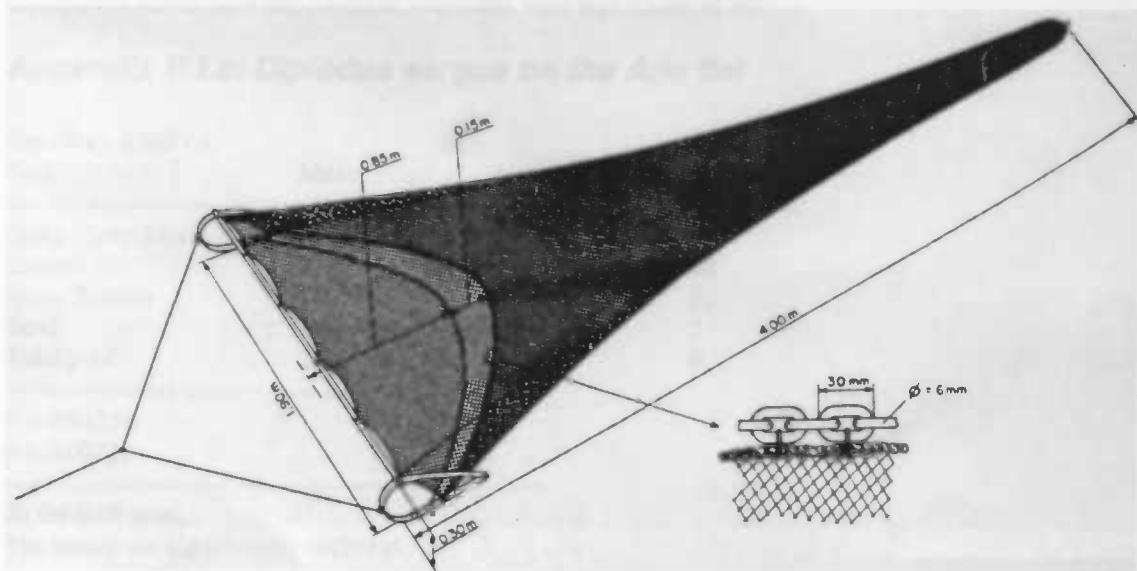
Appendix A.V.a: Location of The Parc National du Banc d'Arguin

Appendix A.V.b: Location of The Baie d'Aouatif within the PNBA



 points at the location of the Of the researche station.

Appendix A.VI :Beamtrawl



The beamtrawl is made of a net with a meshwidth of 5 mm with the top side of the net attached to a 1.92 m long wooden beam (made heavier at the bottom with lead). The bottom of the net opening is made heavier with an iron chain, a second chain is attached to the beam. These chains plough the bottom and thus startle the fish present. As the chains follow the beam where to the net is attached, the startled fish entrap themselves as they move up from the bottom in the net opening. A weel with a counter is attached to the side off the net in order to ascertain the distance the beamtrawl covers. One count is equal to 6 turns of the weel, which is 0.51 meters in outline. Giving a distance of 3.06 m covered per count. Multiplied by 1.92 (the length of the beam) this leads to a ratio of 1 count per 5.88 m^2 sampled.

Appendix B: statistics

Appendix B contains the results of the statistical tests, used to ascertain if the differences in length distribution found between different substrates were significant or not.

Appendix B.I.a: *Diplodus sargus* on the Arie flat

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	3.5	0	1
Zostera	2.475	0.23372	40
Gully Zostera	2.3	0	1
Sand	1.62857	0.14238	7
Tidal pool	2.75	1.64333	4

$$F = 4.91356$$

$$p = 0.00211$$

At the 0.05 level,

The means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.475	0.23372	40
Gully Zostera	2.3	0	1
Sand	1.62857	0.14238	7
Tidal pool	2.75	1.64333	4

$$F = 5.22704$$

$$p = 0.00333$$

At the 0.05 level,

The means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.475	0.23372	40
Sand	1.62857	0.14238	7
Tidal pool	2.75	1.64333	4

$$F = 7.83035$$

$$p = 0.00114$$

At the 0.05 level,

the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	3.5	0	1
Gully Zostera	2.3	0	1

F = --

p = --

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.475	0.23372	40
Gully Zostera	2.3	0	1

F = 0.12784

p = 0.72261

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Sand	1.62857	0.14238	7
Tidal pool	2.75	1.64333	4

F = 4.98083

p = 0.05254

At the 0.05 level,
the means are NOT significantly different.

Appendix B.I.b: *Diplodus sargus* on the Francesc flat

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	2.6	0.5	2
Zostera	2.68667	0.1741	15
Gully Zostera	2.3	0	1
Sand	--	0	0
Tidal pool	2.53529	0.15743	17

F = --

p = --

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.68667	0.1741	15
Gully Zostera	2.3	0	1

F = 0.80511

p = 0.38474

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	2.6	0.5	2
Zostera	2.68667	0.1741	15

F = 0.06769

p = 0.79827

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	2.6	0.5	2
Zostera	2.68667	0.1741	15
Gully Zostera	2.3	0	1

$F = 0.37562$

$p = 0.69314$

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	2.6	0.5	2
Zostera	2.68667	0.1741	15
Gully Zostera	2.3	0	1
Tidal pool	2.53529	0.15743	17

$F = 0.51809$

$p = 0.67293$

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	2.6	0.5	2
Tidal pool	2.53529	0.15743	17

$F = 0.04219$

$p = 0.83969$

At the 0.05 level,
the means are NOT significantly different.

Appendix B.II: *Diplodus sargus* flats combined

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.53273	0.22298	55
Tidal pool	2.57619	0.3799	21
Sand	1.62857	0.14238	7
Gully Zostera	2.3	0	2
Gully Cymodocea	2.9	0.52	3

F = 5.79664

p = 3.65201E-4

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.53273	0.22298	55
Tidal pool	2.57619	0.3799	21
Sand	1.62857	0.14238	7

F = 10.55692

p = 8.53447E-5

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.53273	0.22298	55
Tidal pool	2.57619	0.3799	21
Sand	1.62857	0.14238	7
Gully Zostera	2.3	0	2

F = 7.19808

p = 2.41767E-4

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.53273	0.22298	55
Tidal pool	2.57619	0.3799	21

F = 0.10817**p = 0.74316**

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.53273	0.22298	55
Sand	1.62857	0.14238	7

F = 23.61962**p = 8.80159E-6**

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Tidal pool	2.57619	0.3799	21
Sand	1.62857	0.14238	7

F = 14.50177**p = 7.69586E-4**

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Tidal pool	2.57619	0.3799	21
Sand	1.62857	0.14238	7
Gully Zostera	2.3	0	2
Gully Cymodocea	2.9	0.52	3

F = 5.68527**p = 0.00345**

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Tidal pool	2.57619	0.3799	21
Gully Zostera	2.3	0	2
Gully Cymodocea	2.9	0.52	3

F = 0.61289

p = 0.5504

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.53273	0.22298	55
Gully Zostera	2.3	0	2
Gully Cymodocea	2.9	0.52	3

F = 1.10296

p = 0.33887

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.53273	0.22298	55
Tidal pool	2.57619	0.3799	21
Gully Zostera	2.3	0	2
Gully Cymodocea	2.9	0.52	3

F = 0.64918

p = 0.58585

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Zostera	2.3	0	2
Gully Cymodocea	2.9	0.52	3

F = 1.24615

p = 0.34565

At the 0.05 level,
the means are NOT significantly different.

Appendix B.III.a: *Gobius microps* on the Arie flat

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	1.92	0.07511	10
Zostera	2.62105	0.20195	76
Gully Zostera	2.42	0.15956	10
Sand	2.56087	0.45794	23
Tidal pool	2.464	0.05907	25

F = 5.55088

p = 3.55782E-4

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.62105	0.20195	76
Sand	2.56087	0.45794	23

F = 0.24596

p = 0.62106

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	1.92	0.07511	10
Zostera	2.62105	0.20195	76
Sand	2.56087	0.45794	23

F = 8.90566

p = 2.66018E-4

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.62105	0.20195	76
Gully Zostera	2.42	0.15956	10
Sand	2.56087	0.45794	23

F = 0.7591

p = 0.47061

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.62105	0.20195	76
Sand	2.56087	0.45794	23
Tidal pool	2.464	0.05907	25

F = 1.07314

p = 0.34517

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	1.92	0.07511	10
Gully Zostera	2.42	0.15956	10

F = 10.65341

p = 0.00431

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.62105	0.20195	76
Gully Zostera	2.42	0.15956	10
Sand	2.56087	0.45794	23
Tidal pool	2.464	0.05907	25

F = 1.08691

p = 0.3571

At the 0.05 level,
the means are NOT significantly different.

Appendix B.III.B: *Gobius microps* on the Francesc flat.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	2.55238	0.64462	21
Zostera	2.7	0.14	4
Gully Zostera	--	0	0
Sand	2.36364	0.09455	11
Tidal pool	2.76667	0.20333	3

F = --

p = --

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	2.55238	0.64462	21
Zostera	2.7	0.14	4
Sand	2.36364	0.09455	11
Tidal pool	2.76667	0.20333	3

F = 0.47621

p = 0.70087

At the 0.05 level,
the means are NOT significantly different.

Appendix B.IV: *Gobius microps* flats combined.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.625	0.19734	80
Tidal pool	2.49643	0.07665	28
Sand	2.49706	0.34272	43
Gully zostera	2.42	0.15956	10
Gully Cymodocea	2.34839	.54258	31

F = 1.83613

p = 0.12387

At the 0.05 level,
the means are NOT significantly different

Appendix B.V.a: *Gobius minutus* on the Arie flat

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	2.91579	1.46742	57
Zostera	2.65749	0.51583	708
Gully Zostera	2.9	1.42636	45
Tidal pool	3.05863	2.03353	394
Sand	2.41605	0.30457	324

F = 22.04072

p = 0

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.65749	0.51583	708
Gully Zostera	2.9	1.42636	45
Tidal pool	3.05863	2.03353	394
Sand	2.41605	0.30457	324

F = 29.27974

p = 0

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.65749	0.51583	708
Tidal pool	3.05863	2.03353	394
Sand	2.41605	0.30457	324

F = 43.86494

p = 0

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.65749	0.51583	708
Gully Zostera	2.9	1.42636	45

F = 4.37199

p = 0.03687

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Tidal pool	3.05863	2.03353	394
Sand	2.41605	0.30457	324

F = 58.56317

p = 6.37268E-14

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	2.91579	1.46742	57
Zostera	2.9	1.42636	45

F = 0.00433

p = 0.94769

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	2.91579	1.46742	57
Zostera	2.65749	0.51583	708

F = 6.00973

p = 0.01445

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	2.91579	1.46742	57
Tidal pool	3.05863	2.03353	394

F = 0.5176

p = 0.47224

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	2.91579	1.46742	57
Sand	2.41605	0.30457	324

F = 25.41086

p = 7.19192E-7

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	2.91579	1.46742	57
Gully Zostera	2.9	1.42636	45
Tidal pool	3.05863	2.03353	394

F = 0.47639

p = 0.62131

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.65749	0.51583	708
Sand	2.41605	0.30457	324

F = 28.82026

p = 9.81236E-8

At the 0.05 level,
the means are significantly different.

Appendix B.V.b: *Gobius minutus* on the Francesc flat

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	3.35667	3.18473	90
Zostera	2.5521	0.23556	286
Gully Zostera	2.51463	0.08678	41
Tidal pool	2.67705	0.64013	244
Sand	2.43607	0.09353	183

F = 22.69613

p = 0

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.5521	0.23556	286
Tidal pool	2.67705	0.64013	244
Sand	2.43607	0.09353	183

F = 9.11278

p = 1.23684E-4

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	3.35667	3.18473	90
Gully Zostera	2.51463	0.08678	41

F = 8.97953

p = 0.00328

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Tidal pool	2.67705	0.64013	244
Sand	2.43607	0.09353	183

F = 14.95557

p = 1.27309E-4

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.5521	0.23556	286
Gully Zostera	2.51463	0.08678	41

F = 0.23167**p = 0.63061**

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	3.35667	3.18473	90
Tidal pool	2.67705	0.64013	244

F = 22.96656**p = 2.49051E-6**

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	3.35667	3.18473	90
Sand	2.43607	0.09353	183

F = 46.11607**p = 7.03249E-11**

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Zostera	2.51463	0.08678	41
Tidal pool	2.67705	0.64013	244

F = 1.64782**p = 0.20031**

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Zostera	2.51463	0.08678	41
Sand	2.43607	0.09353	183

F = 2.2399

p = 0.13591

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Zostera	2.51463	0.08678	41
Tidal pool	2.67705	0.64013	244
Sand	2.43607	0.09353	183

F = 8.19303

p = 3.18472E-4

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.5521	0.23556	286
Gully Zostera	2.51463	0.08678	41

F = 0.23167

p = 0.63061

At the 0.05 level,
the means are NOT significantly different.

Appendix B.VI: *Gobius minutus* flats combined

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.62716	0.43715	994
Tidal pool	2.9127	1.53323	638
Sand	2.53669	0.18893	507
Gully Zostera	2.71628	0.81667	86
Gully Cymodocea	3.18571	2.55068	147

F = 24.65322

p = 0

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.62716	0.43715	994
Tidal pool	2.9127	1.53323	638
Sand	2.53669	0.18893	507

F = 33.66381

p = 3.9968E-15

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Zostera	2.71628	0.81667	86
Gully Cymodocea	3.18571	2.55068	147

F = 6.25145

p = 0.0131

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.62716	0.43715	994
Tidal pool	2.9127	1.53323	638

F = 36.60461

p = 1.79118E-9

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.62716	0.43715	994
Gully Zostera	2.71628	0.81667	86

F = 1.34583

p = 0.24627

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.62716	0.43715	994
Gully Cymodocea	3.18571	2.55068	147

F = 56.4249

p = 1.17684E-13

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Sand	2.53669	0.18893	507
Gully Cymodocea	3.18571	2.55068	147

F = 66.87722

p = 1.55431E-15

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Sand	2.53669	0.18893	507
Gully Zostera	2.71628	0.81667	86

F = 8.49363

p = 0.0037

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.62716	0.43715	994
Sand	2.53669	0.18893	507

F = 7.77805

p = 0.00536

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Tidal pool	2.9127	1.53323	638
Gully Zostera	2.71628	0.81667	86

F = 2.01794

p = 0.15588

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Tidal pool	2.9127	1.53323	638
Gully Cymodocea	3.18571	2.55068	147

F = 5.16869

p = 0.02327

At the 0.05 level,
the means are significantly different.

Appendix B.VII.a: *Liza falcipinnis* on the Arie flat.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	--	0	0
Zostera	3.4125	0.88917	16
Gully Zostera	--	0	0
Sand	1.7	0	1
Tidal pool	2.85714	0.09952	7

F = --

p = --

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	3.4125	0.88917	16
Sand	1.7	0	1
Tidal pool	2.85714	0.09952	7

F = 2.85202

p = 0.08021

At the 0.05 level,
the means are NOT significantly different.

Appendix B.VII.b: *Liza falcipinnis* on the Francesc flat

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	--	0	0
Zostera	2.96667	1.23067	6
Gully Zostera	--	0	0
Sand	--	0	0
Tidal pool	2.99091	0.66291	11

F = --

p = --

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.96667	1.23067	6
Tidal pool	2.99091	0.66291	11

F = 0.00268

p = 0.95942

At the 0.05 level,
the means are NOT significantly different.

Appendix B.VIII: *Liza falcipinnis* flats combined

One-Way ANOVA

Data	Mean	Variance	N
Zostera	3.29091	0.96944	22
Tida lpool	2.93889	0.42958	18
Sand	1.7	0	1

F = 2.21782

p = 0.12274

At the 0.05 level,
the means are NOT significantly different.

Appendix B.IX.a: *Mugil cephalus* on the Arie flat

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	--	0	0
Zostera	3.25714	0.82418	14
Gully Zostera	--	0	0
Sand	--	0	0
Tidal pool	2.92	0.312	5

F = --

p = --

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	3.25714	0.82418	14
Tidal pool	2.92	0.312	5

F = 0.59512

p = 0.45104

At the 0.05 level,
the means are NOT significantly different.

Appendix B.IX.b: *Mugil cephalus* on the Francesc flat

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	--	0	0
Zostera	3.62857	0.66571	7
Gully Zostera	--	0	0
Sand	--	0	0
Tidal pool	2.44286	0.06952	7

F = --

p = --

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	3.62857	0.66571	7
Tidal pool	2.44286	0.06952	7

F = 13.38536

p = 0.00327

At the 0.05 level,
the means are significantly different.

Appendix B.X: *Mugil cephalus* flats combined

One-Way ANOVAData	Mean	Variance	N
Zostera	3.38095	0.76762	21
Tidal pool	2.64167	0.21174	12

F = 7.31733

p = 0.01099

At the 0.05 level,
the means are significantly different.

Appendix B.XI.: *Sardinella Aurita* on the Arie flat

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	--	0	0
Zostera	3.01538	0.40974	13
Gully Zostera	--	0	0
Sand	--	0	0
Tidal pool	2.2	0	1

F = --

p = --

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	3.01538	0.40974	13
Tidal pool	2.2	0	1

F = 1.5067

p = 0.24318

At the 0.05 level,
the means are NOT significantly different.

Appendix B.XII: *Sardinella Aurita* flat combined

One-Way ANOVA

Data	Mean	Variance	N
Zostera	2.97879	0.23985	33
tidalpool	2.2	0	1

F = 2.45435

p = 0.12704

At the 0.05 level,
the means are NOT significantly different.

Appendix B.XIII.a: *Solea senegalensis* on the Arie flat

Data	Mean	Variance	N
Gully Cymodocea	--	0	0
Zostera	5.18667	5.13981	15
Gully Zostera	--	0	0
Sand	3.17	4.90432	20
Tidal pool	5.36667	12.96333	3

F = --

p = --

At the 0.05 level,
the means are significantly different.

Data	Mean	Variance	N
Zostera	5.18667	5.13981	15
Sand	3.17	4.90432	20
Tidal pool	5.36667	12.96333	3

F = 3.64211

p = 0.03657

At the 0.05 level,
the means are significantly different.

Data	Mean	Variance	N
Zostera	5.18667	5.13981	15
Sand	3.17	4.90432	20

F = 6.96602

p = 0.01258

At the 0.05 level,
the means are significantly different.

Data	Mean	Variance	N
Zostera	5.18667	5.13981	15
Tidal pool	5.36667	12.96333	3

F = 0.01324

p = 0.90982

At the 0.05 level,
the means are NOT significantly different.

Data	Mean	Variance	N
Sand	3.17	4.90432	20
Tidal pool	5.36667	12.96333	3

F = 2.21936

p = 0.15116

At the 0.05 level,
the means are NOT significantly different.

Appendix B.XIII.b: *Solea senegalensis* on the Francesc flat.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	--	0	0
Zostera	4.95	0.405	2
Gully Zostera	--	0	0
Sand	2.91111	1.38111	9
Tidal pool	2.85	1.511	6

F = --

p = --

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Sand	2.91111	1.38111	9
Tidal pool	2.85	1.511	6

F = 0.00939

p = 0.92426

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	4.95	0.405	2
Sand	2.91111	1.38111	9
Tidal pool	2.85	1.511	6

F = 2.77159

p = 0.09681

At the 0.05 level,
the means are NOT significantly different.

Appendix B.XIV: *Solea senegalensis* flats combined.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	5.15882	4.52882	17
Tidal pool	3.68889	5.76861	9
Sand	3.08966	3.73739	29

F = 5.36778

p = 0.0076

At the 0.05 level,
the means are significantly different.

[One-Way ANOVA

Data	Mean	Variance	N
Zostera	5.15882	4.52882	17
Tidal pool	3.68889	5.76861	9

F = 2.57279

p = 0.1218

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Tidal pool	3.68889	5.76861	9
Sand	3.08966	3.73739	29

F = 0.58879

p = 0.44789

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	5.15882	4.52882	17
Sand	3.08966	3.73739	29

F = 11.39974

p = 0.00154

At the 0.05 level,
the means are significantly different.

Appendix B.XV.a: *Syngnathus typhle* on the Arie flat

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	9.16429	7.80555	14
Zostera	7.95	6.09985	68
Gully Zostera	8.99091	9.85891	11
Tidal pool	9.37297	6.28748	74
Sand	8.09091	9.40491	11

F = 2.96982

p = 0.02099

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	7.95	6.09985	68
Gully Zostera	8.99091	9.85891	11
Tidal pool	9.37297	6.28748	74
Sand	8.09091	9.40491	11

F = 3.85502

p = 0.01069

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	7.95	6.09985	68
Tidal pool	9.37297	6.28748	74
Sand	8.09091	9.40491	11

F = 5.88295

p = 0.00347

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	9.16429	7.80555	14
Gully Zostera	8.99091	9.85891	11

F = 0.02129

p = 0.88527

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	9.16429	7.80555	14
Zostera	7.95	6.09985	68
Gully Zostera	8.99091	9.85891	11

F = 1.76363

p = 0.17729

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA:

Data	Mean	Variance	N
Gully Zostera	8.99091	9.85891	11
Tidal pool	9.37297	6.28748	74

F = 0.20809

p = 0.64946

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Zostera	8.99091	9.85891	11
Sand	8.09091	9.40491	11

F = 0.46253

p = 0.50424

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Tidal pool	9.37297	6.28748	74
Sand	8.09091	9.40491	11

F = 2.36238

p = 0.1281

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	9.16429	7.80555	14
Gully Zostera	8.99091	9.85891	11

F = 0.02129

p = 0.88527

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	7.95	6.09985	68
Gully Zostera	8.99091	9.85891	11

F = 1.5572

p = 0.21586

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	7.95	6.09985	68
Gully Zostera	8.99091	9.85891	11
Tidal pool	9.37297	6.28748	74
Sand	8.09091	9.40491	11

F = 3.85502

p = 0.01069

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Zostera	8.99091	9.85891	11
Tidal pool	9.37297	6.28748	74
Sand	8.09091	9.40491	11

F = 1.15573

p = 0.31931

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	9.16429	7.80555	14
Gully Zostera	8.99091	9.85891	11
Tidal pool	9.37297	6.28748	74
Sand	8.09091	9.40491	11

F = 0.76005

p = 0.51896

At the 0.05 level,
the means are NOT significantly different.

Appendix B.XV.b: *Syngnathus typhle* on the Francesc flat.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	10.1371	9.60303	62
Zostera	6.05	0.605	2
Gully Zostera	7.4	3.24353	18
Sand	8.33333	3.52333	3
Tidal pool	7.17083	5.52824	24

F = 7.51948

p = 2.32151E-5

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	6.05	0.605	2
Gully Zostera	7.4	3.24353	18

F = 1.05927

p = 0.31701

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	6.05	0.605	2
Gully Zostera	7.4	3.24353	18
Sand	8.33333	3.52333	3
Tidal pool	7.17083	5.52824	24

F = 0.52056

p = 0.67041

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	6.05	0.605	2
Sand	8.33333	3.52333	3
Tidal pool	7.17083	5.52824	24

F = 0.62812**p = 0.54149**

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	10.1371	9.60303	62
Zostera	6.05	0.605	2

F = 3.42198**p = 0.0691**

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	10.1371	9.60303	62
Zostera	6.05	0.605	2
Gully Zostera	7.4	3.24353	18

F = 7.88243**p = 7.56312E-4**

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	10.1371	9.60303	62
Gully Zostera	7.4	3.24353	18

F = 12.71868**p = 6.22347E-4**

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Sand	8.33333	3.52333	3
Tidal pool	7.17083	5.52824	24

F = 0.67136**p = 0.42032**

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Zostera	7.4	3.24353	18
Sand	8.33333	3.52333	3

F = 0.68439**p = 0.41835**

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	10.1371	9.60303	62
Sand	8.33333	3.52333	3

F = 0.98939**p = 0.3237**

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Cymodocea	10.1371	9.60303	62
Tidal pool	7.17083	5.52824	24

F = 17.93716**p = 5.81361E-5**

At the 0.05 level, the means are significantly different.

Appendix B.XVI: *Syngnathus typhle* flats combined.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	7.89571	6.03346	70
Tidal pool	8.83367	6.94865	98
Sand	8.14286	7.78725	14
Gully Zostera	8.00345	6.10749	29
Gully Cymodocea	9.95789	9.30754	76

F = 6.28244

p = 7.42887E-5

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Gully Zostera	8.00345	6.10749	29
Gully Cymodocea	9.95789	9.30754	76

F = 9.50276

p = 0.00263

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	7.89571	6.03346	70
Tidal pool	8.83367	6.94865	98
Sand	8.14286	7.78725	14

F = 2.78565

p = 0.06437

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Zostera	7.89571	6.03346	70
Tidal pool	8.83367	6.94865	98
Sand	8.14286	7.78725	14
Gully Zostera	8.00345	6.10749	29

F = 2.09763**p = 0.10165**

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Tidal pool	8.83367	6.94865	98
Gully Cymodocea	9.95789	9.30754	76

F = 6.78175**p = 0.01002**

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N N
Zostera	7.89571	6.03346	70
Gully Cymodocea	9.95789	9.30754	76

F = 20.02367**p = 1.54259E-5**

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Tidal pool	8.83367	6.94865	98
Gully Cymodocea	9.95789	9.30754	76

F = 6.78175**p = 0.01002**

At the 0.05 level,
the means are significantly different.

One-Way ANOVA

Data	Mean	Variance	N
Sand	8.14286	7.78725	14
Gully Cymodocea	9.95789	9.30754	76

F = 4.28789

p = 0.04131

At the 0.05 level,
the means are significantly different.

Appendix B.XVI: Relative length change *Diplodus Sargus*

One-Way ANOVA *Diplodus sargus* on *Zostera*

Data	Mean	Variance	N
27-01-02	2.32222	0.06694	9
01-02-02	2.30833	0.24265	12
11-02-02	2.62	0.107	5
28-02-02	3	0	1
04-03-02	3	0.37	3
12-03-02	--	0	0
15-03-02	2.63333	0.51067	6

F = --

p = --

At the 0.05 level,
the means are significantly different.

One-Way ANOVA *Diplodus sargus* on *Zostera*

Data	Mean	Variance	N
27-01-02	2.32222	0.06694	9
01-02-02	2.30833	0.24265	12
11-02-02	2.62	0.107	5
04-03-02	3	0.37	3
15-03-02	2.63333	0.51067	6

F = 1.76006

p = 0.16304

At the 0.05 level,
the means are NOT significantly different.

Appendix B.XVII: Relative length change *Gobius minutus*

One-Way ANOVA *Gobius minutus* on sand

Data	Mean	Variance	N
27-01-02	2.42857	0.10374	14
01-02-02	2.59091	0.05891	11
11-02-02	2.51	0.28767	10
28-02-02	2.4375	0.07125	8
04-03-02	2.58	0.11289	10
12-03-02	2.56875	0.08762	16
15-03-02	2.625	0.0025	4

$$F = 0.51079$$

$$p = 0.79807$$

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA *Gobius minutus* on Tidal pool

Data	Mean	Variance	N
27-01-02	2.47812	0.18176	32
01-02-02	3.76	3.623	5
11-02-02	2.55862	0.2718	29
28-02-02	3.87143	4.90414	21
04-03-02	2.83333	0.48242	12
12-03-02	3.27143	2.49767	28
15-03-02	3.475	2.03071	8

$$F = 3.74691$$

$$p = 0.00181$$

At the 0.05 level,
the means are significantly different.

One-Way ANOVA <i>Gobius minutus</i> on <i>zostera</i>			
Data	Mean	Variance	N
27-01-02	2.50741	0.23148	27
01-02-02	2.565	0.24345	20
11-02-02	2.87407	1.63818	54
28-02-02	2.71579	0.42696	19
04-03-02	2.61094	0.26639	64
12-03-02	2.67164	0.12449	67
15-03-02	2.73077	0.12397	13

F = 1.12922

p = 0.34563

At the 0.05 level,
the means are NOT significantly different.

Appendix B.XVIII: Relative length change typhle Syngnathus

One-Way ANOVA *Syngnathus typhle* on Zostera

Data	Mean	Variance	N
27-01-02	9.68	1.94622	10
01-02-02	7.7625	6.36268	8
11-02-02	8.48	5.467	5
28-02-02	8.6	15.68	2
04-03-02	9.7	2.86	4
12-03-02	8.15	6.183	6
15-03-02	6.7	5.78	2

F = 1.055

p = 0.41074

At the 0.05 level,
the means are NOT significantly different.

One-Way ANOVA *Syngnathus typhle* on Tidal pool

Data	Mean	Variance	N
27-01-02	9.71667	3.12567	6
01-02-02	8.93333	7.30333	3
11-02-02	9.88889	4.63361	9
28-02-02	9.3	4.74	6
04-03-02	10.9	1.71	3
12-03-02	8.575	3.18917	4
15-03-02	4.6	0	1

F = 1.44096

p = 0.23884

At the 0.05 level,
the means are NOT significantly different.

Appendix B.XIX: *Diplodus sargus* χ^2 test for independence.

Table 4. χ^2 test for independence for *Diplodus sargus* on the Tidal pool Substrate.

	Arie	Francesc	Total		Arie	Francesc
0 t/m 2	2	1	3.0000		0.5714	2.4286
2 t/m 2.5	2	16	18.0000		3.4286	14.5714
Total	4.0000	17.0000	21.0000			

degrees of freedom 1

Chisquare 0.023

x alpha= 5% 3.841

yates correctie 4.184

χ^2 Yates corrected > X α

H_0 = rejected

Table 5. χ^2 test for independence for *Diplodus sargus* on the Zostera Substrate.

Observed				Expected	
	Arie	Francesc	Total	Arie	Francesc
0 t/m 2	7	1	8.0000	5.8182	2.1818
2 t/m 2.5	15	5	20.0000	14.5455	5.4545
2.5 t/m 3	14	7	21.0000	15.2727	5.7273
>3	4	2	6.0000	4.3636	1.6364
total	40.0000	15.0000	55.0000		

degrees of freedom 3

Chisquare 0.791

x alpha= 5% 7.815

χ^2 < X α

H_0 = accepted

Appendix B.XX: *Gobius microps* χ^2 test for independence.

Table 7. χ^2 test for independence for *Gobius microps* on the Tidal pool Substrate.

Observed					expected	
	Arie	Francesc	total		Arie	Francesc
0 t/m 2.5	16.00	1.00	17.00		15.18	1.82
>2.5	9.00	2.00	11.00		9.82	1.18
total	25.00	3.00	28.00			

degrees of freedom 1

Chisquare 0.304

x alpha= 5% 3.841

yates correctie 1.231

χ^2 Yates corrected < $\chi\alpha$

H_0 = accepted

Table 8. χ^2 test for independence for *Gobius microps* on the *Zostera* Substrate.

Observed					Expected	
	Arie	Francesc	total		Arie	Francesc
0 t/m 2.5	29	1	30.0000		28.5000	1.5000
2.5 t/m 3	42	2	44.0000		41.8000	2.2000
>3	5	1	6.0000		5.7000	0.3000
total	76.0000	4.0000	80.0000			

degrees of freedom 2

Chisquare 0.384

x alpha= 5% 5.991

$\chi^2 < \chi\alpha$

H_0 = accepted

Table 9. χ^2 test for independence for *Gobius microps* on the Sand Substrate.

Observed					Expected	
	Arie	Francesc	total		Arie	Francesc
0 t/m 2	3	2	5.0000		3.3824	1.6176
2 t/m 2.5	9	7	16.0000		10.8235	5.1765
>2.5	11	2	13.0000		8.7941	4.2059
total	23.0000	11.0000	34.0000			

Degrees of freedom 2

Chisquare 0.247

x alpha= 5% 5.991

$\chi^2 < \chi\alpha$

H_0 = accepted

Table 10. χ^2 test for independence for *Gobius microps* on the Gully/ *Cymodocea* Substrate.

Observed					Expected	
	Arie	Francesc	total		Arie	Francesc
0 t/m 2	7	3	10.0000		3.2258	6.7742
>2 t/m 2.5	3	18	21.0000		6.7742	14.2258
Total	10.0000	21.0000	31.0000			

Degrees of freedom 1

Chisquare 0.001

X alpha= 5% 3.841

Yates correctie 9.470

χ^2 Yates corrected > $\chi\alpha$

H_0 = rejected

Appendix B.XXI: *Gobius minutus* χ^2 test for independence.

Table 11. χ^2 test for independence for *Gobius Minutus* on the tidal pool Substrate.

Observed	Arie	Frances	total	Expected	Francesc
1 t/m 2	43	23	66.00	46.11	28.55
2 t/m 2.5	125	100	225.00	157.18	97.34
2.5 t/m 3	123	89	212.00	148.10	91.72
3 t/m 3.5	34	12	46.00	32.13	19.90
3.5 t/m 4	7	8	15.00	10.48	6.49
4 t/m 4.5	12	1	13.00	9.08	5.62
4.5 t/m 5	7	2	9.00	6.29	3.89
5 t/m 5.5	7	2	9.00	6.29	3.89
5.5 t/m 6	4	2	6.00	4.19	2.60
6 t/m 6.5	10	4	14.00	9.78	6.06
>6.5	22	1	23.00	16.07	9.95
Total	394.0000	244.0000	564.00		

Degrees of freedom 10

Chisquare 0.0001

X alpha= 18.307

5%

$\chi^2 < X\alpha$

H_0 = accepted

Table 12. χ^2 test for independence for *Gobius Minutus* on the *Zostera* Substrate.

Observed	Arie	Frances	total	Expected	Francesc
1 t/m 2	59	33	92.0000	65.5292	26.4708
2 t/m 2.5	250	101	351.0000	250.0080	100.9920
2.5 t/m 3	328	130	458.0000	326.2213	131.7787
3 t/m 3.5	46	14	60.0000	42.7364	17.2636
3.5 t/m 4	5	4	9.0000	6.4105	2.5895
>4	20	4	24.0000	17.0946	6.9054
Total	708.0000	286.0000	994.0000		

degrees of freedom 5

Chisquare 0.310

x alpha= 5% 11.07

$\chi^2 < X\alpha$

H_0 = accepted

Table 13. χ^2 test for independence for *Gobius Minutus* on the Sand Substrate.

Observed	Arie	Frances	total	expected	Francesc
1 t/m 2	59	15	74.0000	47.2899	26.7101
2 t/m 2.5	148	99	247.0000	157.8462	89.1538
2.5 t/m 3	100	65	165.0000	105.4438	59.5562
>3	17	4	21.0000	13.4201	7.5799
Total	324.0000	183.0000	507.0000		

degrees of freedom 3

Chisquare 0.0043

x alpha= 5% 7.815

$\chi^2 < X\alpha$

H_0 = accepted

Table 14. χ^2 test for independence for Gobius Minutus on the Gully/Cymodocea Substrate.

Observed				Expected		
	Arie	Frances	total		Arie	Francesc
0 t/m 2	7	11	18.000		6.980	11.020
2 t/m 2.5	22	26	48.000		18.612	29.388
2.5 t/m 3	18	28	46.000		17.837	28.163
3 t/m 4.5	2	7	9.000		3.490	5.510
4.5 t/m 5.5	4	1	5.000		1.939	3.061
5.5 t/m 6	1	2	3.000		1.163	1.837
6 t/m 6.5	2	5	7.000		2.714	4.286
>6.5	1	10	11.000		4.265	6.735
total	57.0	90.0	147.000			

degrees of freedom 7

chisquare 0.5793

x alpha= 5% 14.067

$\chi^2 < \chi\alpha$

H_0 = accepted

Table 15. χ^2 test for independence for Gobius Minutus on the Gully/ Zostera Substrate.

Observed				expected		
	Arie	Francesc	Total		Arie	Francesf
0 t/m 2.5	18	22	40.000		20.930	19.070
2.5 t/m 3	20	16	36.000		18.837	17.163
>3	7	3	10.000		5.233	4.767
Total	45.0000	41.0000	86.000			

degrees of freedom 2

Chisquare 0.323

x alpha= 5% 5.991

$\chi^2 < \chi\alpha$

H_0 = accepted

Appendix B.XXII: *Liza falcipinnes* χ^2 test for independence

Table 16. χ^2 test for independence for *Liza falcipinnes* on the tidal pool Substrate.

Observed				expected		
	Arie	Francesc	Total		Arie	Francesf
0 t/m 2		1	2	3.0000		1.1667
2 t/m 3		4	5	9.0000		3.5000
3 t/m 3.5		1	1	2.0000		0.7778
>3.5		1	3	4.0000		1.5556
Total	7.000	11.0000	18.0000			2.4444

degrees of freedom 3

chisquare 0.900

x alpha= 5% 7.815

$\chi^2 < \chi\alpha$

H_0 = accepted

Table 17. χ^2 test for independence for *Liza falcipinnes* on the *Zostera* Substrate

Observed				Expected		
	Arie	Francesc	Total		Arie	Francesf
0 t/m 2.5		3	2	5.0000		3.8095
2.5 t/m 4		8	1	9.0000		6.8571
4 t/m 4.5		1	1	2.0000		1.5238
>4.5		4	1	5.0000		3.8095
Total	16.000	5.0000	21.0000			1.1905

degrees of freedom 3

Chisquare 0.509

x alpha= 5% 7.815

$\chi^2 < \chi\alpha$

H_0 = accepted

Appendix B.XXIII: *Mugil cephalus* χ^2 test for independence

Table 18. χ^2 test for independence for *Mugil cephalus* on the Tidal pool Substrate

Observed				Expected		
	Arie	Francesc	Total		Arie	Francesf
0 t/m 2.5	2	6	8.00		3.333	4.667
> 2.5	3	1	4.00		1.667	2.333
Total	5.0	7.0	12.0			

degrees of freedom 1

Chisquare 0.098

x alpha= 5% 3.841

yates correctie 3.014

χ^2 Yates corrected < X α

H_0 = accepted

Table 19. χ^2 test for independence for *Mugil cephalus* on the Zostera Substrate

Observed				Expected		
	Arie	Francesc	Total		Arie	Francesf
0 t/m 3	5	1	6.0000		4.000	2.000
3 t/m 3.5	3	2	5.0000		3.333	1.667
3.5 t/m 4	2	2	4.0000		2.667	1.333
>4	4	2	6.0000		4.000	2.000
Total	14.0000	7.0000	21.0000			

degrees of freedom 3

Chisquare 0.717

x alpha= 5% 7.815

χ^2 < X α

H_0 = accepted

Appendix B.XXIV: *Sardinella aurita* χ^2 test for independence

Table 20. χ^2 test for independence for *Sardinella aurita* on the *Zostera* Substrate

Observed	Sardinella aurita	Zostera	Total	Expected		
	Arie	Francesc			Arie	Francesc
0 t/m 2	1	2	3.0000	1.2353	1.7647	
2 t/m 2.5	4	2	6.0000	2.4706	3.5294	
2.5 t/m 3	3	5	8.0000	3.2941	4.7059	
3 t/m 3.5	1	7	8.0000	3.2941	4.7059	
3.5 t/m 4	2	3	5.0000	2.0588	2.9412	
>4	3	1	4.0000	1.6471	2.3529	
total	14.0000	20.0000	34.0000			

Degrees of freedom 6

Chisquare 0.274

X alpha= 5% 12.59

$\chi^2 < X\alpha$

H_0 = accepted

Appendix B.XXV: *Solea senegalensis* χ^2 test for independence

Table 21. χ^2 test for independence for *Solea senegalensis* on the tidal pool Substrate

Observed	Arie	Francesc	Total	expected	Arie	Francesc
1 t/m 2			0.0000		0.0000	0.0000
>2	3.0000	6.0000	9.0000		3.0000	6.0000
Total	3.0000	6.0000	9.0000			

Degrees of freedom 1

Chisquare 1

x alpha= 5% 3.841

Yates correctie 0.125

Table 22. χ^2 test for independence for *Solea senegalensis* on the *Zostera* Substrate

Observed	Arie	Francesc	Total	expected	Arie	Francesc
1 t/m 2			0.0000		0.0000	0.0000
>2	15.0000	2.0000	17.0000		15.0000	2.0000
Total	15.0000	2.0000	17.0000			

Degrees of freedom 1

Chisquare 1

x alpha= 5% 3.841

Yates correctie 0.1416667

Table 23. χ^2 test for independence for *Solea senegalensis* on the Sand Substrate

Observed	Arie	Francesc	Total	expected	Arie	Francesc
1 t/m 2	11	3	14.0000		9.6552	4.3448
>2	9.0000	6.0000	15.0000		10.3448	4.6552
Total	20.0000	9.0000	29.0000			

Degrees of freedom 1

Chisquare 0.2800383

x alpha= 5% 3.841

Yates correctie 1.3395569

$\chi^2 < \chi\alpha$

H_0 = accepted

Appendix B.XXVI: *Syngnathus typhle* χ^2 test for independence

Table 24. χ^2 test for independence for *Syngnathus typhle* on the tidal pool Substrate

Observed	Arie	Francesc	Total	expected	
				Arie	Francesf
0 t/m 1.5	2	1	3.000	2.265	0.735
1.5 t/m 2	8	8	16.000	12.082	3.918
2 t/m 2.5	9	7	16.000	12.082	3.918
2.5 t/m 3	22	6	28.000	21.143	6.857
3 t/m 3.5	24	1	25.000	18.878	6.122
>3.5	9	1	10.000	7.551	2.449
total	74.0	24.0	98.0		

Degrees of freedom 5

Chisquare 0.007

x alpha= 5% 11.07

$\chi^2 < X\alpha$

H_0 = accepted

Table 25. χ^2 test for independence for *Syngnathus typhle* on the *Zostera* Substrate

Observed	Arie	Francesc	Total	Expected	
				Arie	Francesf
0 t/m 2	18	1	19.00	18.457	0.543
> 2	50	1	51.00	49.543	1.457
total	68.00	2.00	70.00		

Degrees of freedom 1

Chisquare 0.461

x alpha= 5% 3.841

Yates correctie 0.682

$\chi^2 < X\alpha$

H_0 = accepted

Table 26. χ^2 test for independence for *Syngnathus typhle* on the Sand Substrate

Observed	Arie	Francesc	Total	Expected	
				Arie	Francesf
0 t/m 2.5	7	1	8.00	6.286	1.714
2.5 t/m 3	4	2	6.00	4.714	1.286
total	11.00	3.00	14.00		

Degrees of freedom 1

Chisquare 0.347

x alpha= 5% 3.841

Yates correctie 1.216

$\chi^2 < X\alpha$

H_0 = accepted

Table 27. χ^2 test for independence for *Syngnathus typhle* on the Gully/ Cymodocea Substrate

Observed	Arie	Francesc	Total	Expected	Arie	Francesf
1.5 t/m 2		3	10	13.00		2.427
2 t/m 2.5		0	5	5.00		0.933
2.5 t/m 3		5	13	18.00		3.360
3 t/m 3.5		3	15	18.00		3.360
>3.5		3	18	21.00		3.920
total		14.00	61.00	75.00		

Degrees of freedom 4

Chisquare 0.625

x alpha= 5% 9.488

$\chi^2 < \chi\alpha$

H_0 = accepted

Table 28. χ^2 test for independence for *Syngnathus typhle* on the Gully / Zostera Substrate

Observed	Arie	Francesc	Total	Expected	Arie	Francesf
0 t/m 2		2	5	7.0000		2.6552
2 t/m 2.5		2	7	9.0000		3.4138
2.5 t/m 3		3	4	7.0000		2.6552
>3		4	2	6.0000		2.2759
total		11.0000	18.0000	29.0000		

degrees of freedom 3

Chisquare 0.337

x alpha= 5% 7.815

$\chi^2 < \chi\alpha$

H_0 = accepted

Appendix C: Species descriptions.

This appendix contains the species descriptions of the ten most abundant species on the flats.

Appendix C.I : *Diplodus sargus sargus* (White seabream)

Name:	<i>Diplodus sargus sargus</i> (Linnaeus, 1758)
Family:	Sparidae (Porgies)
Order:	Perciformes
Class:	Actinopterygii (ray-finned fishes)
Max. size:	45 cm TL (male/unsexed)
Max weight:	2kg
Max reported age:	10 years
Environment:	demarsal; brackish; marine; depth range 5-50 m
Climate:	Subtropical 47° N-28° S
Importance:	Fisheries: minor commercial; Aquaculture: commercial; Gamefish: yes
Resilience:	Medium, minimum population doubling time 1.4 - 4.4 years (K=0.11-0.25; tmax.=10)
Distribution:	Eastern Atlantic: Bay of Biscay and Mediterranean to South Africa. As well as the Black Sea.
Diagnosis:	Dorsal spines (total): 11-12 Dorsal soft rays (total): 12-15 Anal soft spines: 3-3 Anal soft rays: 11-14 Body with 5 black and 4 grey vertical bands (may differ during juvenile stages). Snout is longer than eye diameter.
Biology:	Inhabits coastal rocky reef areas and <i>Posidonia oceanica</i> beds. Like other sparids, it is very active and frequents the surf zone, primarily at dawn. Feeds on shellfish and other benthic invertebrates, which it picks from the sediment.
Threatened:	Not in IUCN Red list.
Dangerous:	harmless
Preyed on by:	a.o. Carcharhinidae.
Main ref.:	Bauchott, M.L. 1987.

Appendix C.II : *Gobius microps*

Name:	<i>Gobius microps</i> , <i>Pomatoschistus microps</i> (Krøyer, 1838).
Family:	Gobiidae
Order:	Perciformes
Class:	Actinopterygii (ray-finned fishes)
Max. size:	9.0 cm (male/unsexed)
Max weight:	n.a.
Max reported age:	3 years
Environment:	demersal; amphidromous; brackish; marine; depth range 0-12m
Climate:	temperate 8-24°C
Importance:	Fisheries: of no interest; Aquariums: commercial; Gamefish: none
Resilience:	High, minimum population doubling time less than 15 months (K=0.29; tm=0.8; tmax.= 2.6)
Distribution:	Eastern Atlantic: Norway to Morocco, including Baltic Sea and western Mediterranean. Also in Mauritania and Canary Islands.
Diagnosis:	No scales in front of first dorsal fin. Dark spot in the rear end of the first dorsal fin and dark area on pectoral base.
Biology:	Enters estuaries, salt marshes and pools. Prefers brackish water. Feeds on small crustaceans, worms, chironomid larvae and mites. Its burrowing habit allows it to survive low water levels and to avoid predators.. Spawns in the summer, the eggs are attached to the ceiling in shelters built from bivalve shells. The male defends and aerates the eggs for about 9 days
Threatened:	not in IUCN Red list
Dangerous:	harmless
Preyed on by:	a.o. Clupeidae, Lotidae, Percidae, Triglidae and Soleidae
Main ref.:	Maugé, L.A. 1986.

Appendix C.III : *Gobius minutus* (Sand goby)

Name:	<i>Gobius minutus</i> , <i>Pomatoschistus Minutus</i> (Pallas,1770)
Family:	Gobiidae
Order:	Perciformes
Class:	Actinopterygii (ray-finned fishes)
Max. size:	11.0 cm (male/unsexed)
Max weight:	n.a.
Max reported age:	3 years
Environment:	Demersal; Brackish; Marine; Depth range 4- 200 m
Climate:	Temperate; 8-24° C; 50° N- 30°N
Importance:	Fisheries: of no interest; Aquaculture: show aquarium; Gamefish: of no interest
Resilience:	High, minimum population time less than 15 months (K=0.93; tm=0.7; tmax=2.7)
Distribution:	Eastern Atlantic; Tromsø, Norway to Spain; also Mediterranean and Black Sea, but probably not throughout. <i>P. minutus elongatus</i> exists in the Mediterranean and the Black Sea.
Diagnosis:	Dark spot on the hind end of first dorsal fin. Dark area on the front part of pectoral fins indistinct or missing. Scales on the back, in front of first dorsal fin.
Biology:	This occasionally schooling species is found in inshore sandy and muddy areas. Juveniles are found in lower estuaries. Mainly diurnal, this species feeds on small polychaetes, amphipods, (corophiids, caprellids), cumaceans and mysids. Spawns in the summer in shallow waters. The eggs are attached to the ceiling in shelters built from bivalve shells. The male defends and aerates the eggs for about 10 days until the larvae are about 3mm long. Larvae are pelagic at first. Young fish only start to live at the bottom when they are 17-18 mm long.
Threatened:	Not in IUCN Red List.
Dangerous:	harmless
Preyed on by:	a.o. Clupeidae, Lotidae, Triglidae and Cottidae
Main ref.:	Miller, P.J. 1986

Appendix C.IV : *Liza falcipinnis* (Sicklefin mullet)

Name:	<i>Liza falcipinnis</i> (Valenciennes, 1836)
Family:	Mugilidae (mullets)
Order:	Perciformes
Class:	Actinopterygii (ray-finned fishes)
Max. size:	41.0 cm FL(male/unsexed)
Max weight:	n.a.
Max reported age:	n.a.
Environment:	Demersal; Catadromous; freshwater; brackish; Marine
Climate:	Tropical; 14°N–8°S
Importance:	Fisheries: commercial; Aquaculture: of no interest; Gamefish: of no interest
Resilience:	n.a.
Distribution:	Africa: Mauritania to Congo River and Angola
Diagnosis:	Dorsal spines (total): Dorsal soft rays (total): Anal soft spines: Anal soft rays:
Biology:	Inhabits coastal marine and brackish waters as well as rivers. Feeds on plankton and detritus.
Threatened:	Not in IUCN Red List
Dangerous:	harmless
Preyed on by:	n.a.
Main reef:	Thomson, J.M. 1990

Appendix C.V : *Mugil Cephalus* (Flathead mullet)

Name:	<i>Mugil cephalus</i> (Linnaeus, 1758)
Family:	Mugilidae (mullets)
Order:	Perciformes
Class:	Actinopterygii (ray-finned fishes)
Max. size:	120 cm SL (male/unsexed)
Max weight:	8 kg
Max reported age:	16 years
Environment:	Benthopelagic; Catadromous; Freshwater; Brackish; Marine; Depth range 0-120m
Climate:	Subtropical; 8-24°C, 42°N-42°S
Importance:	Fisheries: highly commercial; Aquaculture: commercial; Gamefish: Yes , Aquarium; commercial, Bait; occasionally.
Resilience:	Medium, minimum doubling time 1.4-4.4 years (K=0.09-0.15; tm=2-3; tmax=16; Fec=1.6 million.
Distribution:	Cosmopolitan in coastal waters of the tropical and subtropical zones of all seas. Eastern Pacific: California, USA to Chile. Western Atlantic: Nova Scotia, Canada to Brazil; Cape Cod to southern Gulf of Mexico; absent in the Bahamas and most of the West Indies and Caribbean. Eastern Atlantic: Bay of Biscay to South Africa including the Mediterranean Sea and Black Sea.
Diagnosis:	Dorsal spines (total): 5-5 Dorsal soft rays (total): 8-8 Anal soft spines: 3-3 Anal soft rays: 8-8 Colour olive-green dorsally, sides silvery shading to white ventrally. Lips thin. Pectoral fins short (not reaching the first dorsal fin).
Biology:	Coastal species that often enters estuaries and rivers. Usually in schools over sand or mud bottom and dense vegetation. Mainly diurnal, feed on zooplankton, benthic organisms and detritus. Adult fish tend to feed mainly on algae while inhabiting fresh waters. Reproduction takes place in the sea, from July to October. Females spawn 5 to 7 million eggs provided with a notable vitellus. Sexually mature at 7 to 8 years. Marketed fresh, dried, salted and frozen; roe sold fresh or smoked; also used in Chinese medicine. Very important commercial species in many parts of the world
Threatened:	Not in IUCN Red List
Dangerous:	harmless
Preyed on by:	a.o. Crocodylidae, Delphinidae, Pelecanidae, Carcharhinidae, Anguillidae, Centrarchidae, Otariidae, Phalacrocoracidae, Platycephalidae and Pomatomidae
Main ref.:	Harrison, I.J. 1995

Appendix C.VI: *Sardinella aurita* (Round sardinella)

Name:	<i>Sardinella aurita</i> (Valenciennes, 1847)
Family:	Clupeidae (Herrings, shads, sardines, and menhadens)
Order:	Perciformes
Class:	Actinopterygii (ray-finned fishes)
Max. size:	31.0 cm TL (male/unsexed)
Max weight:	1kg
Max reported age:	7 years
Environment:	Pelagic; oceanodromus; brackish; marine; depth range 0-350 m
Climate:	Subtropical; 46°N-36°S
Importance:	Fisheries: highly commercial; Aquaculture: of no importance; Gamefish: of no importance; Bait: usually
Resilience:	High, minimum population doubling time less than 15 months ($K=0.25-1.2$; $tm=1$; $tmax=7$)
Distribution:	Eastern Atlantic: Mediterranean and Black seas; Gibraltar to Saldanha Bay, South Africa. Western Atlantic: Cape Cod, USA to Argentina. Bahamas, Antilles, Gulf of Mexico and Caribbean coast.
Diagnosis:	Dorsal spines (total): 0-0 Dorsal soft rays (total): 13-21 Anal soft spines: 0-0 Anal soft rays: 12-23 Usually sub-cylindrical, but sometimes a little compressed; belly rather rounded but scutes apparent. Lower gill rakers fine and numerous, more than 80. Anterior gill rakers on lower limbs of second and third gill arches lying more or less flat. The pelvic finray count of 8 distinguishes it from all other species of <i>Sardinella</i> , <i>Harengula</i> , <i>Opisthonema</i> , <i>Herklotisichtus</i> and <i>Amblygaster</i> that occur with it. Resembles <i>Clupea</i> but has two fleshy outgrowths along outer margin of gill opening and numerous fine fronto-parietal striae on top of head. Flanks silvery with a faint golden mid-lateral line; a faint golden spot behind gill opening; black spot at hind border of gill cover. Black bluish gray, sometimes greenish. Sides silvery to brassy, without spots or streaks. Body very slender. Scales deciduous.
Biology:	Schools in coastal waters from inshore to edge of shelf. Prefers clear saline water with a minimum temperature below 24°C. Juveniles tend to stay in nursery areas, but on maturity rejoin adult stocks offshore. Strongly migratory, often rising to surface at night and dispersing. Feeds mainly on zooplankton, especially on copepods. Juveniles take phytoplankton. Breeds perhaps

throughout the year, but with distinct peaks. In some areas there are two main spawning periods. Marketed fresh or canned.

Not in IUCN Red List

harmless

Carangidae, Coryphaenidae, Laridae, Scombridae and Xiphiidae.

Threatened:

Dangerous:

Preyed on by:

Main ref.:

Whitehead, P.J.P. 1985

Appendix C.VII: *Solea senegalensis* (Senegalese sole)

Name:	<i>Solea senegalensis</i> (Kaup, 1858)										
Family:	Soleidae (Soles)										
Order:	Perciformes										
Class:	Actinopterygii (ray-finned fishes)										
Max. size:	60 cm SL (male/ unsexed)										
Max weight:	n.a.										
Max reported age:	n.a.										
Environment:	Demersal; marine; depth range 12-65m										
Climate:	subtropical 47°N-14°N										
Importance:	Fisheries: commercial ; Aquaculture: of no importance; Gamefish: of no importance										
Resilience:	n.a.										
Distribution:	Eastern Atlantic: Bay of Biscay to Senegal and Canary Islands										
Diagnosis:	<table><tr><td>Dorsal spines (total):</td><td>0-0</td></tr><tr><td>Dorsal soft rays (total):</td><td>76-89</td></tr><tr><td>Anal soft spines:</td><td>0-0</td></tr><tr><td>Anal soft rays:</td><td>62-71</td></tr><tr><td>Vertebrae:</td><td>44-46</td></tr></table>	Dorsal spines (total):	0-0	Dorsal soft rays (total):	76-89	Anal soft spines:	0-0	Anal soft rays:	62-71	Vertebrae:	44-46
Dorsal spines (total):	0-0										
Dorsal soft rays (total):	76-89										
Anal soft spines:	0-0										
Anal soft rays:	62-71										
Vertebrae:	44-46										
	Last ray of dorsal and anal fins joined by a low membrane to the base of the caudal fin. Supratemporal branch of the lateral line forming an arch. Anterior nostril on the blind side not enlarged, its diameter about half that of the eye; it is situated rather close to the front margin of the head, the distance slightly greater than that separating the nostrils from the mouth cleft, 1: 1-1.4. Length of scales above nasal tube on ocular side much less than the length of the tube. Gill rakers like short knobs on the first gill arch on ocular side. Pectoral fin on the ocular side with a black blotch over the whole middle and distal part of the fin; blind side whitish										
Biology:	A predominant littoral species, the juveniles mainly eat zoobenthos.										
Threatened:	Not in IUCN Red List										
Dangerous:	harmless										
Preyed on by:	n.a.										
Main ref.:	Desoutter, M. 1990										

Appendix C.VIII: *Syngnathus typhle* (Broad-nosed pipefish)

Name:	<i>Syngnathus typhle</i> (Linnaeus, 1758)
Family:	Syngnathidae (Pipefishes and seahorses), subfamily: Syngnathinae
Order:	Syngnathiformes
Class:	Actinopterygii (ray-finned fishes)
Max. size:	35 cm TL (Male/unsexed)
Max weight:	n.a.
Max reported age:	n.a.
Environment:	Demersal; non migratory; brackish; marine; depth range 1-20m
Climate:	temperate 8-24°C
Importance:	Fisheries: of no interest; Aquaculture: of no interest; Gamefish: of no interest; aquarium; show aquarium
Resilience:	Medium, minimum population doubling time 1.4-4.4 years (K=0.56; tm= 1; Fec=100)
Distribution:	Eastern Atlantic: Vardø, Norway, Baltic Sea and the British Isles to Morocco. Also throughout the Mediterranean, Black Sea and Sea of Azov. Record of Ghana is still questionable
Diagnosis:	Dorsal spines (total): Dorsal soft rays (total): Anal soft spines: Anal soft rays: Snout is compressed and taller than the eye diameter. Male posses a breeding pouch, wherein the fertilised eggs are carried until the embryos are fully developed and the juvenile specimen can fend for itself.
Biology:	Usually found along the coast and estuaries at a temperature range of 8-24°C. often associated with <i>Zostera</i> or other vegetation. Spawns in summer. Feeds on Nekton
Threatened:	Not in IUCN Red List
Dangerous:	harmless
Preyed on by:	n.a.
Main ref.:	Dawson, C.E. 1986.

Appendix D.I Species size data:

Date	Location	Habitat	flat	Species	Size (cm)
2/8/02	acgeul	Gully Cymodocea	arie	diploodus sargus	3.5
2/8/02	acgeul	Gully Cymodocea	arie	gobius groen	1.6
2/8/02	acgeul	Gully Cymodocea	arie	gobius groen	1.6
2/8/02	acgeul	Gully Cymodocea	arie	gobius groen	1.7
2/8/02	acgeul	Gully Cymodocea	arie	gobius groen	1.8
2/8/02	acgeul	Gully Cymodocea	arie	gobius groen	1.9
2/8/02	acgeul	Gully Cymodocea	arie	gobius groen	1.9
2/8/02	acgeul	Gully Cymodocea	arie	gobius groen	2
2/8/02	acgeul	Gully Cymodocea	arie	gobius groen	2.1
2/8/02	acgeul	Gully Cymodocea	arie	gobius groen	2.1
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	1.6
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	1.9
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	2
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	2.1
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	2.3
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	2.4
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	2.5
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	2.5
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	2.5
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	2.7
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	2.7
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	2.8
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	2.9
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	3.4
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	4.6
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	4.7
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	5.1
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	5.4
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	6
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	6.5
2/8/02	acgeul	Gully Cymodocea	arie	gobius minutus	6.7
2/8/02	acgeul	Gully Cymodocea	arie	Hippocampus hippocampus	2.5
2/8/02	acgeul	Gully Cymodocea	arie	sepia	3
2/8/02	acgeul	Gully Cymodocea	arie	sepia	5
2/8/02	acgeul	Gully Cymodocea	arie	sygnathus kaupi	16.1
2/8/02	acgeul	Gully Cymodocea	arie	sygnathus kaupi	17.2
2/8/02	acgeul	Gully Cymodocea	arie	sygnathus kaupi	20.9
2/8/02	acgeul	Gully Cymodocea	arie	sygnathus type	9.2
2/8/02	acgeul	Gully Cymodocea	arie	sygnathus type	9.3
2/8/02	acgeul	Gully Cymodocea	arie	sygnathus type	11.9
2/8/02	acgeul	Gully Cymodocea	arie	sygnathus type	12.1
2/8/02	acgeul	Gully Cymodocea	arie	sygnathus type	12.1
1/31/02	agras	Zostera	arie	gobius minutus	1.6
1/31/02	agras	Zostera	arie	gobius minutus	1.8
1/31/02	agras	Zostera	arie	gobius minutus	1.9
1/31/02	agras	Zostera	arie	gobius minutus	2
1/31/02	agras	Zostera	arie	gobius minutus	2
1/31/02	agras	Zostera	arie	gobius minutus	2.3
1/31/02	agras	Zostera	arie	gobius minutus	2.4
1/31/02	agras	Zostera	arie	gobius minutus	2.4
1/31/02	agras	Zostera	arie	gobius minutus	2.5
1/31/02	agras	Zostera	arie	gobius minutus	3
2/12/02	agras	Zostera	arie	gobius minutus	1.7
2/12/02	agras	Zostera	arie	gobius minutus	1.9
2/12/02	agras	Zostera	arie	gobius minutus	2.2
2/12/02	agras	Zostera	arie	gobius minutus	2.2
2/12/02	agras	Zostera	arie	gobius minutus	2.4
2/12/02	agras	Zostera	arie	gobius minutus	2.4
2/12/02	agras	Zostera	arie	gobius minutus	2.5
2/12/02	agras	Zostera	arie	gobius minutus	2.5
2/12/02	agras	Zostera	arie	gobius minutus	2.6
2/12/02	agras	Zostera	arie	gobius minutus	2.6
2/12/02	agras	Zostera	arie	gobius minutus	2.7
2/12/02	agras	Zostera	arie	gobius minutus	2.8
2/12/02	agras	Zostera	arie	gobius minutus	3
2/12/02	agras	Zostera	arie	gobius minutus	3.3

3/1/02	apoel2	Tidal pool	arie	gobius minutus	2.8
3/1/02	apoel2	Tidal pool	arie	gobius minutus	2.8
3/1/02	apoel2	Tidal pool	arie	gobius minutus	2.9
3/1/02	apoel2	Tidal pool	arie	gobius minutus	3
3/1/02	apoel2	Tidal pool	arie	gobius minutus	3
3/1/02	apoel2	Tidal pool	arie	gobius minutus	3.1
3/1/02	apoel2	Tidal pool	arie	gobius minutus	3.2
3/1/02	apoel2	Tidal pool	arie	gobius minutus	3.3
3/1/02	apoel2	Tidal pool	arie	gobius minutus	3.5
3/1/02	apoel2	Tidal pool	arie	gobius minutus	3.6
3/1/02	apoel2	Tidal pool	arie	gobius minutus	4.2
3/1/02	apoel2	Tidal pool	arie	gobius minutus	4.9
3/1/02	apoel2	Tidal pool	arie	gobius minutus	5.3
3/1/02	apoel2	Tidal pool	arie	gobius minutus	6.2
3/1/02	apoel2	Tidal pool	arie	gobius minutus	6.6
3/1/02	apoel2	Tidal pool	arie	gobius minutus	6.7
3/1/02	apoel2	Tidal pool	arie	gobius minutus	6.7
3/1/02	apoel2	Tidal pool	arie	gobius minutus	7.6
3/1/02	apoel2	Tidal pool	arie	gobius minutus	10.6
1/30/02	apoel2	Tidal pool	arie	liza falcipinnes	3.3
3/1/02	apoel2	Tidal pool	arie	liza falcipinnes	2.3
3/1/02	apoel2	Tidal pool	arie	liza falcipinnes	2.7
3/1/02	apoel2	Tidal pool	arie	liza falcipinnes	2.8
3/1/02	apoel2	Tidal pool	arie	liza falcipinnes	2.9
3/1/02	apoel2	Tidal pool	arie	liza falcipinnes	2.9
3/1/02	apoel2	Tidal pool	arie	liza falcipinnes	3.1
3/1/02	apoel2	Tidal pool	arie	mugil cephalus	2.4
3/1/02	apoel2	Tidal pool	arie	mugil cephalus	2.5
3/1/02	apoel2	Tidal pool	arie	mugil cephalus	2.7
3/1/02	apoel2	Tidal pool	arie	mugil cephalus	3.3
3/1/02	apoel2	Tidal pool	arie	mugil cephalus	3.7
3/1/02	apoel2	Tidal pool	arie	sardinella aurita	2.2
1/30/02	apoel2	Tidal pool	arie	sepia	1.8
2/26/02	apoel2	Tidal pool	arie	sepia	5.5
3/1/02	apoel2	Tidal pool	arie	sepia	4
3/1/02	apoel2	Tidal pool	arie	sygnathus kaupi	10.4
1/30/02	apoel2	Tidal pool	arie	sygnathus tyle	10
1/30/02	apoel2	Tidal pool	arie	sygnathus tyle	11.3
1/30/02	apoel2	Tidal pool	arie	sygnathus tyle	11.3
1/30/02	apoel2	Tidal pool	arie	sygnathus tyle	11.6
2/26/02	apoel2	Tidal pool	arie	sygnathus tyle	6.5
2/26/02	apoel2	Tidal pool	arie	sygnathus tyle	8.5
2/26/02	apoel2	Tidal pool	arie	sygnathus tyle	9.6
2/26/02	apoel2	Tidal pool	arie	sygnathus tyle	11
2/26/02	apoel2	Tidal pool	arie	sygnathus tyle	11
2/26/02	apoel2	Tidal pool	arie	sygnathus tyle	11.7
3/1/02	apoel2	Tidal pool	arie	sygnathus tyle	11.8
1/31/02	aSand	Sand	arie	gobius minutus	1.5
1/31/02	aSand	Sand	arie	gobius minutus	1.6
1/31/02	aSand	Sand	arie	gobius minutus	2
1/31/02	aSand	Sand	arie	gobius minutus	2.1
1/31/02	aSand	Sand	arie	gobius minutus	2.1
1/31/02	aSand	Sand	arie	gobius minutus	2.1
1/31/02	aSand	Sand	arie	gobius minutus	2.1
1/31/02	aSand	Sand	arie	gobius minutus	2.2
1/31/02	aSand	Sand	arie	gobius minutus	2.2
1/31/02	aSand	Sand	arie	gobius minutus	2.4
1/31/02	aSand	Sand	arie	gobius minutus	2.5
1/31/02	aSand	Sand	arie	gobius minutus	2.5
1/31/02	aSand	Sand	arie	gobius minutus	2.5
1/31/02	aSand	Sand	arie	gobius minutus	2.6
1/31/02	aSand	Sand	arie	gobius minutus	2.9
2/12/02	aSand	Sand	arie	gobius minutus	1.7
2/12/02	aSand	Sand	arie	gobius minutus	1.8
2/12/02	aSand	Sand	arie	gobius minutus	1.8
2/12/02	aSand	Sand	arie	gobius minutus	1.9
2/12/02	aSand	Sand	arie	gobius minutus	2.2
2/12/02	aSand	Sand	arie	gobius minutus	2.2
2/12/02	aSand	Sand	arie	gobius minutus	2.2
2/12/02	aSand	Sand	arie	gobius minutus	2.6
2/12/02	aSand	Sand	arie	gobius minutus	2.7
2/12/02	aSand	Sand	arie	gobius minutus	2.7

3/15/02 azgeul	Zostera	arie	atherine	1.2
3/15/02 azgeul	Zostera	arie	atherine	1.3
3/15/02 azgeul	Zostera	arie	atherine	1.2
3/15/02 azgeul	Zostera	arie	atherine	1.3
3/15/02 azgeul	Zostera	arie	atherine	1.3
3/15/02 azgeul	Zostera	arie	atherine	1.3
3/15/02 azgeul	Zostera	arie	atherine	1.2
3/15/02 azgeul	Zostera	arie	atherine	1.4
3/15/02 azgeul	Zostera	arie	boops boops	3.8
3/15/02 azgeul	Zostera	arie	boops boops	3.5
3/15/02 azgeul	Zostera	arie	diplodus sargus	2.3
2/8/02 azgeul	Gully Zostera	arie	gobius groen	1.7
2/8/02 azgeul	Gully Zostera	arie	gobius groen	1.8
3/15/02 azgeul	Zostera	arie	gobius groen	2.5
3/15/02 azgeul	Zostera	arie	gobius groen	2.4
3/15/02 azgeul	Zostera	arie	gobius groen	2.9
3/15/02 azgeul	Zostera	arie	gobius groen	2.4
2/8/02 azgeul	Gully Zostera	arie	gobius minutus	2.3
2/8/02 azgeul	Gully Zostera	arie	gobius minutus	2.3
2/8/02 azgeul	Gully Zostera	arie	gobius minutus	2.4
2/8/02 azgeul	Gully Zostera	arie	gobius minutus	2.4
2/8/02 azgeul	Gully Zostera	arie	gobius minutus	2.5
2/8/02 azgeul	Gully Zostera	arie	gobius minutus	2.5
2/8/02 azgeul	Gully Zostera	arie	gobius minutus	2.5
2/8/02 azgeul	Gully Zostera	arie	gobius minutus	2.6
2/8/02 azgeul	Gully Zostera	arie	gobius minutus	2.6
2/8/02 azgeul	Gully Zostera	arie	gobius minutus	2.6
2/8/02 azgeul	Gully Zostera	arie	gobius minutus	2.7
2/8/02 azgeul	Gully Zostera	arie	gobius minutus	2.7
2/8/02 azgeul	Gully Zostera	arie	gobius minutus	2.7
2/8/02 azgeul	Gully Zostera	arie	gobius minutus	2.7
2/8/02 azgeul	Gully Zostera	arie	gobius minutus	2.7
2/8/02 azgeul	Gully Zostera	arie	gobius minutus	7.6
2/28/02 azgeul	Gully Zostera	arie	gobius minutus	2.3
2/28/02 azgeul	Gully Zostera	arie	gobius minutus	2.4
2/28/02 azgeul	Gully Zostera	arie	gobius minutus	2.7
3/1/02 azgeul	Gully Zostera	arie	gobius minutus	6.9
3/15/02 azgeul	Zostera	arie	gobius minutus	2.5
3/15/02 azgeul	Zostera	arie	gobius minutus	2.7
3/15/02 azgeul	Zostera	arie	gobius minutus	6.9
3/15/02 azgeul	Zostera	arie	gobius minutus	2.6
3/15/02 azgeul	Zostera	arie	gobius minutus	2.7
3/17/02 azgeul	zostera	arie	loligo	0.7
3/17/02 azgeul	zostera	arie	loligo	0.8
2/28/02 azgeul	Gully Zostera	arie	sepia	0.3
3/15/02 azgeul	Zostera	arie	sepia	3.6
3/15/02 azgeul	Zostera	arie	Stepholepis hispidus	6.7
3/15/02 azgeul	Zostera	arie	sygnathus kaupi	11
2/8/02 azgeul	Gully Zostera	arie	sygnathus tyle	4.5
2/8/02 azgeul	Gully Zostera	arie	sygnathus tyle	4.7
2/8/02 azgeul	Gully Zostera	arie	sygnathus tyle	11.1
2/8/02 azgeul	Gully Zostera	ane	sygnathus tyle	11.6
2/8/02 azgeul	Gully Zostera	arie	sygnathus tyle	15.2
3/15/02 azgeul	Zostera	arie	sygnathus tyle	6.1
3/7/02 cymgeul2	Cymnodosea	arie	gobius groen	2.5
2/18/02 cymgeul2	Gully Cymodocea	arie	gobius minutus	1.8
2/18/02 cymgeul2	Gully Cymodocea	arie	gobius minutus	1.9
2/18/02 cymgeul2	Gully Cymodocea	arie	gobius minutus	1.9
2/18/02 cymgeul2	Gully Cymodocea	ane	gobius minutus	2
2/18/02 cymgeul2	Gully Cymodocea	arie	gobius minutus	2.2
2/18/02 cymgeul2	Gully Cymodocea	arie	gobius minutus	2.2
2/18/02 cymgeul2	Gully Cymodocea	ane	gobius minutus	2.2
2/18/02 cymgeul2	Gully Cymodocea	arie	gobius minutus	2.3
2/18/02 cymgeul2	Gully Cymodocea	ane	gobius minutus	2.3
2/18/02 cymgeul2	Gully Cymodocea	arie	gobius minutus	2.3
2/18/02 cymgeul2	Gully Cymodocea	arie	gobius minutus	2.3
2/18/02 cymgeul2	Gully Cymodocea	arie	gobius minutus	2.4
2/18/02 cymgeul2	Gully Cymodocea	arie	gobius minutus	2.4
2/18/02 cymgeul2	Gully Cymodocea	arie	gobius minutus	2.4
2/18/02 cymgeul2	Gully Cymodocea	arie	gobius minutus	2.5
2/18/02 cymgeul2	Gully Cymodocea	arie	gobius minutus	2.5

2/3/02 geul	Gully Zostera	arie	sygnathus type	8.1
2/3/02 geul	Gully Zostera	arie	sygnathus type	9.1
2/3/02 geul	Gully Zostera	arie	sygnathus type	9.1
2/3/02 geul	Gully Zostera	arie	sygnathus type	10.9
1/27/02 gras	Zostera	arie	dicentrarchus punctatus	13.9
2/1/02 gras	Zostera	arie	dicentrarchus punctatus	15.5
2/11/02 gras	Zostera	arie	dicentrarchus punctatus	14.5
3/4/02 gras	Zostera	arie	dicentrarchus punctatus	15.6
1/27/02 gras	Zostera	arie	diplodus sargus	1.9
1/27/02 gras	Zostera	arie	diplodus sargus	2.1
1/27/02 gras	Zostera	arie	diplodus sargus	2.1
1/27/02 gras	Zostera	arie	diplodus sargus	2.3
1/27/02 gras	Zostera	arie	diplodus sargus	2.3
1/27/02 gras	Zostera	arie	diplodus sargus	2.4
1/27/02 gras	Zostera	arie	diplodus sargus	2.5
1/27/02 gras	Zostera	arie	diplodus sargus	2.6
1/27/02 gras	Zostera	arie	diplodus sargus	2.7
2/1/02 gras	Zostera	arie	diplodus sargus	1.4
2/1/02 gras	Zostera	arie	diplodus sargus	1.6
2/1/02 gras	Zostera	arie	diplodus sargus	1.9
2/1/02 gras	Zostera	arie	diplodus sargus	1.9
2/1/02 gras	Zostera	arie	diplodus sargus	2.3
2/1/02 gras	Zostera	arie	diplodus sargus	2.4
2/1/02 gras	Zostera	arie	diplodus sargus	2.6
2/1/02 gras	Zostera	arie	diplodus sargus	2.6
2/1/02 gras	Zostera	arie	diplodus sargus	2.6
2/1/02 gras	Zostera	arie	diplodus sargus	2.7
2/1/02 gras	Zostera	arie	diplodus sargus	2.8
2/1/02 gras	Zostera	arie	diplodus sargus	2.9
2/11/02 gras	Zostera	arie	diplodus sargus	2.3
2/11/02 gras	Zostera	arie	diplodus sargus	2.3
2/11/02 gras	Zostera	arie	diplodus sargus	2.6
2/11/02 gras	Zostera	arie	diplodus sargus	2.9
2/11/02 gras	Zostera	arie	diplodus sargus	3
2/28/02 gras	Zostera	arie	diplodus sargus	3
3/4/02 gras	Zostera	arie	diplodus sargus	2.3
3/4/02 gras	Zostera	arie	diplodus sargus	3.3
3/4/02 gras	Zostera	arie	diplodus sargus	3.4
3/15/02 gras	Zostera	arie	diplodus sargus	2.6
3/15/02 gras	Zostera	arie	diplodus sargus	1.6
3/15/02 gras	Zostera	arie	diplodus sargus	2.5
3/15/02 gras	Zostera	arie	diplodus sargus	3.7
3/15/02 gras	Zostera	arie	diplodus sargus	2.3
3/15/02 gras	Zostera	arie	diplodus sargus	3.1
1/27/02 gras	Zostera	arie	gobius groen	1.2
3/4/02 gras	Zostera	arie	gobius groen	2.6
3/4/02 gras	Zostera	arie	gobius groen	2.7
3/4/02 gras	Zostera	arie	gobius groen	2.7
3/4/02 gras	Zostera	arie	gobius groen	3
3/15/02 gras	Zostera	arie	gobius groen	2.8
3/15/02 gras	Zostera	arie	gobius groen	1.9
1/27/02 gras	Zostera	arie	gobius minutus	2
1/27/02 gras	Zostera	arie	gobius minutus	2.1
1/27/02 gras	Zostera	arie	gobius minutus	2.1
1/27/02 gras	Zostera	arie	gobius minutus	2.1
1/27/02 gras	Zostera	arie	gobius minutus	2.1
1/27/02 gras	Zostera	arie	gobius minutus	2.1
1/27/02 gras	Zostera	arie	gobius minutus	2.1
1/27/02 gras	Zostera	arie	gobius minutus	2.1
1/27/02 gras	Zostera	arie	gobius minutus	2.2
1/27/02 gras	Zostera	arie	gobius minutus	2.2
1/27/02 gras	Zostera	arie	gobius minutus	2.4
1/27/02 gras	Zostera	arie	gobius minutus	2.4
1/27/02 gras	Zostera	arie	gobius minutus	2.4
1/27/02 gras	Zostera	arie	gobius minutus	2.4
1/27/02 gras	Zostera	arie	gobius minutus	2.4
1/27/02 gras	Zostera	arie	gobius minutus	2.5
1/27/02 gras	Zostera	arie	gobius minutus	2.5
1/27/02 gras	Zostera	arie	gobius minutus	2.6
1/27/02 gras	Zostera	arie	gobius minutus	2.6
1/27/02 gras	Zostera	arie	gobius minutus	2.6

2/11/02 gras	Zostera	arie	sygnathus type	5.3
2/11/02 gras	Zostera	arie	sygnathus type	7.8
2/11/02 gras	Zostera	arie	sygnathus type	8.2
2/11/02 gras	Zostera	arie	sygnathus type	9.4
2/11/02 gras	Zostera	arie	sygnathus type	11.7
2/28/02 gras	Zostera	arie	sygnathus type	5.8
2/28/02 gras	Zostera	arie	sygnathus type	11.4
3/4/02 gras	Zostera	arie	sygnathus type	8
3/4/02 gras	Zostera	arie	sygnathus type	8.5
3/4/02 gras	Zostera	arie	sygnathus type	11
3/4/02 gras	Zostera	arie	sygnathus type	11.3
3/12/02 gras	Zostera	arie	sygnathus type	5.7
3/12/02 gras	Zostera	arie	sygnathus type	6.1
3/12/02 gras	Zostera	arie	sygnathus type	7.3
3/12/02 gras	Zostera	arie	sygnathus type	7.3
3/12/02 gras	Zostera	arie	sygnathus type	11.1
3/12/02 gras	Zostera	arie	sygnathus type	11.4
3/15/02 gras	Zostera	arie	sygnathus type	5
3/15/02 gras	Zostera	arie	sygnathus type	8.4
3/15/02 gras	Zostera	arie	tilapia	6.3
2/18/02 gras2	Zostera	arie	gobius minutus	1.5
2/18/02 gras2	Zostera	arie	gobius minutus	1.7
2/18/02 gras2	Zostera	arie	gobius minutus	1.9
2/18/02 gras2	Zostera	arie	gobius minutus	1.9
2/18/02 gras2	Zostera	arie	gobius minutus	2.1
2/18/02 gras2	Zostera	arie	gobius minutus	2.1
2/18/02 gras2	Zostera	arie	gobius minutus	2.2
2/18/02 gras2	Zostera	arie	gobius minutus	2.2
2/18/02 gras2	Zostera	arie	gobius minutus	2.2
2/18/02 gras2	Zostera	arie	gobius minutus	2.2
2/18/02 gras2	Zostera	arie	gobius minutus	2.3
2/18/02 gras2	Zostera	arie	gobius minutus	2.3
2/18/02 gras2	Zostera	arie	gobius minutus	2.3
2/18/02 gras2	Zostera	arie	gobius minutus	2.3
2/18/02 gras2	Zostera	arie	gobius minutus	2.4
2/18/02 gras2	Zostera	arie	gobius minutus	2.4
2/18/02 gras2	Zostera	arie	gobius minutus	2.4
2/18/02 gras2	Zostera	arie	gobius minutus	2.4
2/18/02 gras2	Zostera	arie	gobius minutus	2.4
2/18/02 gras2	Zostera	arie	gobius minutus	2.5
2/18/02 gras2	Zostera	arie	gobius minutus	2.5
2/18/02 gras2	Zostera	arie	gobius minutus	2.5
2/18/02 gras2	Zostera	arie	gobius minutus	2.6
2/18/02 gras2	Zostera	arie	gobius minutus	2.6
2/18/02 gras2	Zostera	arie	gobius minutus	2.6
2/18/02 gras2	Zostera	arie	gobius minutus	2.6
2/18/02 gras2	Zostera	arie	gobius minutus	2.6
2/18/02 gras2	Zostera	arie	gobius minutus	2.6
2/18/02 gras2	Zostera	arie	gobius minutus	2.7
2/18/02 gras2	Zostera	arie	gobius minutus	2.7

2/28/02	poel	arie	gobius minutus	2.4
2/28/02	poel	arie	gobius minutus	2.5
2/28/02	poel	arie	gobius minutus	2.6
2/28/02	poel	arie	gobius minutus	2.6
2/28/02	poel	arie	gobius minutus	2.6
2/28/02	poel	arie	gobius minutus	2.7
2/28/02	poel	arie	gobius minutus	2.7
2/28/02	poel	arie	gobius minutus	2.7
2/28/02	poel	arie	gobius minutus	2.7
2/28/02	poel	arie	gobius minutus	2.7
2/28/02	poel	arie	gobius minutus	2.7
2/28/02	poel	arie	gobius minutus	2.8
2/28/02	poel	arie	gobius minutus	2.9
2/28/02	poel	arie	gobius minutus	3.4
2/28/02	poel	arie	gobius minutus	5.2
2/28/02	poel	arie	gobius minutus	6.2
2/28/02	poel	arie	gobius minutus	6.2
2/28/02	poel	arie	gobius minutus	8.2
2/28/02	poel	arie	gobius minutus	8.2
2/28/02	poel	arie	gobius minutus	8.5
3/4/02	poel	arie	gobius minutus	1.7
3/4/02	poel	arie	gobius minutus	2.1
3/4/02	poel	arie	gobius minutus	2.4
3/4/02	poel	arie	gobius minutus	2.5
3/4/02	poel	arie	gobius minutus	2.5
3/4/02	poel	arie	gobius minutus	2.5
3/4/02	poel	arie	gobius minutus	2.6
3/4/02	poel	arie	gobius minutus	2.9
3/4/02	poel	arie	gobius minutus	3.1
3/4/02	poel	arie	gobius minutus	3.1
3/4/02	poel	arie	gobius minutus	3.1
3/4/02	poel	arie	gobius minutus	3.8
3/12/02	poel	arie	gobius minutus	1.7
3/12/02	poel	arie	gobius minutus	1.7
3/12/02	poel	arie	gobius minutus	2.1
3/12/02	poel	arie	gobius minutus	2.3
3/12/02	poel	arie	gobius minutus	2.4
3/12/02	poel	arie	gobius minutus	2.4
3/12/02	poel	arie	gobius minutus	2.5
3/12/02	poel	arie	gobius minutus	2.5
3/12/02	poel	arie	gobius minutus	2.5
3/12/02	poel	arie	gobius minutus	2.6
3/12/02	poel	arie	gobius minutus	2.6
3/12/02	poel	arie	gobius minutus	2.6
3/12/02	poel	arie	gobius minutus	2.7
3/12/02	poel	arie	gobius minutus	2.7
3/12/02	poel	arie	gobius minutus	2.7
3/12/02	poel	arie	gobius minutus	2.9
3/12/02	poel	arie	gobius minutus	2.9
3/12/02	poel	arie	gobius minutus	3
3/12/02	poel	arie	gobius minutus	4.5
3/12/02	poel	arie	gobius minutus	4.7
3/12/02	poel	arie	gobius minutus	5.7
3/12/02	poel	arie	gobius minutus	6
3/12/02	poel	arie	gobius minutus	7.1
3/12/02	poel	arie	gobius minutus	7.9
3/15/02	poel	arie	gobius minutus	2.2
3/15/02	poel	arie	gobius minutus	6.3
3/15/02	poel	arie	gobius minutus	3
3/15/02	poel	arie	gobius minutus	2.6
3/15/02	poel	arie	gobius minutus	5.2
3/15/02	poel	arie	gobius minutus	3.1
3/15/02	poel	arie	gobius minutus	2.7
3/15/02	poel	arie	gobius minutus	2.8
2/1/02	poel	arie	ponyfish	3.8
2/28/02	poel	arie	sepio	3
2/28/02	poel	arie	sepio	3
3/12/02	poel	arie	sepio	3.7

3/12/02	poel	poel	arie	sepia	4.7
3/15/02	poel	poel	arie	sepia	5.7
3/15/02	poel	poel	arie	sepia	6
3/15/02	poel	poel	arie	sepia	6.2
2/11/02	poel	poel	arie	<i>solea vulgaris</i>	1.4
1/27/02	poel	poel	arie	<i>sygnathus type</i>	7.6
1/27/02	poel	poel	arie	<i>sygnathus type</i>	8.2
1/27/02	poel	poel	arie	<i>sygnathus type</i>	9.3
1/27/02	poel	poel	arie	<i>sygnathus type</i>	10.1
1/27/02	poel	poel	arie	<i>sygnathus type</i>	10.6
1/27/02	poel	poel	arie	<i>sygnathus type</i>	12.5
2/1/02	poel	poel	arie	<i>sygnathus type</i>	6.9
2/1/02	poel	poel	arie	<i>sygnathus type</i>	7.9
2/1/02	poel	poel	arie	<i>sygnathus type</i>	12
2/11/02	poel	poel	arie	<i>sygnathus type</i>	4.8
2/11/02	poel	poel	arie	<i>sygnathus type</i>	8.9
2/11/02	poel	poel	arie	<i>sygnathus type</i>	9.9
2/11/02	poel	poel	arie	<i>sygnathus type</i>	9.9
2/11/02	poel	poel	arie	<i>sygnathus type</i>	10.5
2/11/02	poel	poel	arie	<i>sygnathus type</i>	10.6
2/11/02	poel	poel	arie	<i>sygnathus type</i>	10.6
2/11/02	poel	poel	arie	<i>sygnathus type</i>	11.3
2/11/02	poel	poel	arie	<i>sygnathus type</i>	12.5
2/28/02	poel	poel	arie	<i>sygnathus type</i>	6.5
2/28/02	poel	poel	arie	<i>sygnathus type</i>	7.5
2/28/02	poel	poel	arie	<i>sygnathus type</i>	8.4
2/28/02	poel	poel	arie	<i>sygnathus type</i>	10.5
2/28/02	poel	poel	arie	<i>sygnathus type</i>	10.7
2/28/02	poel	poel	arie	<i>sygnathus type</i>	12.2
3/4/02	poel	poel	arie	<i>sygnathus type</i>	9.4
3/4/02	poel	poel	arie	<i>sygnathus type</i>	11.5
3/4/02	poel	poel	arie	<i>sygnathus type</i>	11.8
3/12/02	poel	poel	arie	<i>sygnathus type</i>	5.9
3/12/02	poel	poel	arie	<i>sygnathus type</i>	9.4
3/12/02	poel	poel	arie	<i>sygnathus type</i>	9.4
3/12/02	poel	poel	arie	<i>sygnathus type</i>	9.6
3/15/02	poel	poel	arie	<i>sygnathus type</i>	4.6
1/27/02	poel	poel	arie	tilapia	11
3/15/02	poel	poel	arie	tilapia	10.4
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.1
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.1
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.2
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.3
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.3
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.3
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.4
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.4
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.4
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.4
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.4
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.5
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.5
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.5
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.5
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.5
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.5
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.5
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.5
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.5
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.5
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.5
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.5
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.6
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.6
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.6
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.6
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.6
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.6
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.7
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.8
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.8
2/18/02	poel2	poel/Sand	arie	<i>gobius minutus</i>	2.9
2/27/02	poel2	poel	arie	<i>gobius minutus</i>	2.1
2/27/02	poel2	poel	arie	<i>gobius minutus</i>	2.4
2/27/02	poel2	poel	arie	<i>gobius minutus</i>	2.9
2/27/02	poel2	poel	arie	<i>gobius minutus</i>	4.7

2/18/02 poel2	poel/Sand	arie	ponyfish	4.6
2/18/02 poel2	poel/Sand	arie	sepia	0.6
2/18/02 poel2	poel/Sand	arie	sepia	0.7
2/18/02 poel2	poel/Sand	arie	solea senegalensis	5.3
2/18/02 poel2	poel/Sand	arie	sygnathus tyle	7.6
3/4/02 Sand	Sand	arie	dicentrarchus punctatus	16.8
2/1/02 Sand	Sand	arie	diplodus sargus	1.1
2/1/02 Sand	Sand	arie	diplodus sargus	1.2
3/15/02 Sand	Sand	arie	gobius groen	2.5
3/15/02 Sand	Sand	arie	gobius groen	2.2
1/27/02 Sand	Sand	arie	gobius minutus	2
1/27/02 Sand	Sand	arie	gobius minutus	2.1
1/27/02 Sand	Sand	arie	gobius minutus	2.1
1/27/02 Sand	Sand	arie	gobius minutus	2.2
1/27/02 Sand	Sand	arie	gobius minutus	2.2
1/27/02 Sand	Sand	arie	gobius minutus	2.3
1/27/02 Sand	Sand	arie	gobius minutus	2.3
1/27/02 Sand	Sand	arie	gobius minutus	2.4
1/27/02 Sand	Sand	arie	gobius minutus	2.5
1/27/02 Sand	Sand	arie	gobius minutus	2.6
1/27/02 Sand	Sand	arie	gobius minutus	2.6
1/27/02 Sand	Sand	arie	gobius minutus	2.7
1/27/02 Sand	Sand	arie	gobius minutus	2.9
1/27/02 Sand	Sand	arie	gobius minutus	3.1
2/1/02 Sand	Sand	arie	gobius minutus	2.2
2/1/02 Sand	Sand	arie	gobius minutus	2.4
2/1/02 Sand	Sand	arie	gobius minutus	2.4
2/1/02 Sand	Sand	arie	gobius minutus	2.4
2/1/02 Sand	Sand	arie	gobius minutus	2.6
2/1/02 Sand	Sand	arie	gobius minutus	2.6
2/1/02 Sand	Sand	arie	gobius minutus	2.6
2/1/02 Sand	Sand	arie	gobius minutus	2.7
2/1/02 Sand	Sand	arie	gobius minutus	2.8
2/1/02 Sand	Sand	arie	gobius minutus	3.1
2/11/02 Sand	Sand	arie	gobius minutus	1.4
2/11/02 Sand	Sand	arie	gobius minutus	2.2
2/11/02 Sand	Sand	arie	gobius minutus	2.4
2/11/02 Sand	Sand	arie	gobius minutus	2.5
2/11/02 Sand	Sand	arie	gobius minutus	2.5
2/11/02 Sand	Sand	arie	gobius minutus	2.6
2/11/02 Sand	Sand	arie	gobius minutus	2.6
2/11/02 Sand	Sand	arie	gobius minutus	2.6
2/11/02 Sand	Sand	arie	gobius minutus	2.7
2/11/02 Sand	Sand	arie	gobius minutus	2.7
2/11/02 Sand	Sand	arie	gobius minutus	3.6
2/28/02 Sand	Sand	arie	gobius minutus	2
2/28/02 Sand	Sand	arie	gobius minutus	2.2
2/28/02 Sand	Sand	arie	gobius minutus	2.3
2/28/02 Sand	Sand	arie	gobius minutus	2.4
2/28/02 Sand	Sand	arie	gobius minutus	2.5
2/28/02 Sand	Sand	arie	gobius minutus	2.6
2/28/02 Sand	Sand	arie	gobius minutus	2.7
2/28/02 Sand	Sand	arie	gobius minutus	2.8
3/4/02 Sand	Sand	arie	gobius minutus	1.9
3/4/02 Sand	Sand	arie	gobius minutus	2.3
3/4/02 Sand	Sand	arie	gobius minutus	2.3
3/4/02 Sand	Sand	arie	gobius minutus	2.5
3/4/02 Sand	Sand	arie	gobius minutus	2.6
3/4/02 Sand	Sand	arie	gobius minutus	2.7
3/4/02 Sand	Sand	arie	gobius minutus	2.8
3/4/02 Sand	Sand	arie	gobius minutus	2.8
3/4/02 Sand	Sand	arie	gobius minutus	2.9
3/4/02 Sand	Sand	arie	gobius minutus	3
3/12/02 Sand	Sand	arie	gobius minutus	2.1
3/12/02 Sand	Sand	arie	gobius minutus	2.2
3/12/02 Sand	Sand	arie	gobius minutus	2.2
3/12/02 Sand	Sand	arie	gobius minutus	2.3
3/12/02 Sand	Sand	arie	gobius minutus	2.6
3/12/02 Sand	Sand	arie	gobius minutus	2.6

3/12/02	Sand	Sand	arie	gobius minutus	2.6
3/12/02	Sand	Sand	arie	gobius minutus	2.6
3/12/02	Sand	Sand	arie	gobius minutus	2.7
3/12/02	Sand	Sand	arie	gobius minutus	2.7
3/12/02	Sand	Sand	arie	gobius minutus	2.7
3/12/02	Sand	Sand	arie	gobius minutus	2.8
3/12/02	Sand	Sand	arie	gobius minutus	2.8
3/12/02	Sand	Sand	arie	gobius minutus	2.8
3/12/02	Sand	Sand	arie	gobius minutus	3.2
3/12/02	Sand	Sand	arie	gobius minutus	2.7
3/15/02	Sand	Sand	arie	gobius minutus	2.6
3/15/02	Sand	Sand	arie	gobius minutus	2.6
3/15/02	Sand	Sand	arie	gobius minutus	2.6
3/15/02	Sand	Sand	arie	liza falcipinnis	1.7
3/12/02	Sand	Sand	arie	solea senegalensis	4.2
3/12/02	Sand	Sand	arie	solea senegalensis	8.9
3/15/02	Sand	Sand	arie	solea senegalensis	1.7
1/27/02	Sand	Sand	arie	sygnathus type	2.2
1/27/02	Sand	Sand	arie	sygnathus type	4.5
1/27/02	Sand	Sand	arie	sygnathus type	8.9
2/11/02	Sand	Sand	arie	sygnathus type	8.9
2/11/02	Sand	Sand	arie	sygnathus type	9.8
2/18/02	Sand2	Sand	arie	gobius minutus	1.7
2/18/02	Sand2	Sand	arie	gobius minutus	1.8
2/18/02	Sand2	Sand	arie	gobius minutus	1.9
2/18/02	Sand2	Sand	arie	gobius minutus	2
2/18/02	Sand2	Sand	arie	gobius minutus	2
2/18/02	Sand2	Sand	arie	gobius minutus	2.1
2/18/02	Sand2	Sand	arie	gobius minutus	2.1
2/18/02	Sand2	Sand	arie	gobius minutus	2.2
2/18/02	Sand2	Sand	arie	gobius minutus	2.2
2/18/02	Sand2	Sand	arie	gobius minutus	2.3
2/18/02	Sand2	Sand	arie	gobius minutus	2.3
2/18/02	Sand2	Sand	arie	gobius minutus	2.4
2/18/02	Sand2	Sand	arie	gobius minutus	2.4
2/18/02	Sand2	Sand	arie	gobius minutus	2.4
2/18/02	Sand2	Sand	arie	gobius minutus	2.4
2/18/02	Sand2	Sand	arie	gobius minutus	2.4
2/18/02	Sand2	Sand	arie	gobius minutus	2.4
2/18/02	Sand2	Sand	arie	gobius minutus	2.5
2/18/02	Sand2	Sand	arie	gobius minutus	2.5
2/18/02	Sand2	Sand	arie	gobius minutus	2.7
2/18/02	Sand2	Sand	arie	gobius minutus	2.7
2/27/02	Sand2	Sand	arie	gobius minutus	1.9
2/27/02	Sand2	Sand	arie	gobius minutus	2.1
2/27/02	Sand2	Sand	arie	gobius minutus	2.1
2/27/02	Sand2	Sand	arie	gobius minutus	2.3
3/7/02	Sand2	Sand	arie	gobius minutus	1.6
3/7/02	Sand2	Sand	arie	gobius minutus	1.6
3/7/02	Sand2	Sand	arie	gobius minutus	1.7
3/7/02	Sand2	Sand	arie	gobius minutus	1.7
3/7/02	Sand2	Sand	arie	gobius minutus	1.8
3/7/02	Sand2	Sand	arie	gobius minutus	1.8
3/7/02	Sand2	Sand	arie	gobius minutus	1.9
3/7/02	Sand2	Sand	arie	gobius minutus	1.9
3/7/02	Sand2	Sand	arie	gobius minutus	1.9
3/7/02	Sand2	Sand	arie	gobius minutus	2
3/7/02	Sand2	Sand	arie	gobius minutus	2
3/7/02	Sand2	Sand	arie	gobius minutus	2.1
3/7/02	Sand2	Sand	arie	gobius minutus	2.2
3/7/02	Sand2	Sand	arie	gobius minutus	2.3
3/7/02	Sand2	Sand	arie	gobius minutus	2.3
3/7/02	Sand2	Sand	arie	gobius minutus	2.4
3/7/02	Sand2	Sand	arie	gobius minutus	2.6
3/7/02	Sand2	Sand	arie	gobius minutus	2.7
3/7/02	Sand2	Sand	arie	gobius minutus	2.8

3/11/02 zgras	Zostera	arie	sygnathus type	9.1
3/11/02 zgras	Zostera	arie	sygnathus type	9.6
3/11/02 zgras	Zostera	arie	sygnathus type	10.4
3/11/02 zgras	Zostera	arie	sygnathus type	12.1
3/14/02 zgras	Zostera	arie	sygnathus type	6.3
3/14/02 zgras	Zostera	arie	sygnathus type	8.3
3/17/02 zgras	zostera	arie	sygnathus type	3.9
3/17/02 zgras	zostera	arie	sygnathus type	5.1
3/17/02 zgras	zostera	arie	sygnathus type	6
3/17/02 zgras	zostera	arie	sygnathus type	4.6
3/17/02 zgras	zostera	arie	sygnathus type	6.9
3/17/02 zgras	zostera	arie	sygnathus type	6.2
3/17/02 zgras	zostera	arie	sygnathus type	7.6
3/17/02 zgras	zostera	arie	sygnathus type	3.4
3/17/02 zgras	zostera	arie	sygnathus type	4.7
3/11/02 zgras	Zostera	arie	tilapia	6.3
3/11/02 zgras	Zostera	arie	tilapia	6.5
3/17/02 zgras2	zostera	arie	atherine	2.7
3/17/02 zgras2	zostera	arie	atherine	3.1
3/17/02 zgras2	zostera	arie	atherine	4
3/17/02 zgras2	zostera	arie	atherine	2.4
3/17/02 zgras2	zostera	arie	atherine	2.4
3/17/02 zgras2	zostera	arie	atherine	1.8
3/17/02 zgras2	zostera	arie	atherine	2.6
3/17/02 zgras2	zostera	arie	atherine	2.8
3/17/02 zgras2	zostera	arie	atherine	1.9
3/17/02 zgras2	zostera	arie	atherine	2.5
3/17/02 zgras2	zostera	arie	atherine	3
3/17/02 zgras2	zostera	arie	atherine	2.7
3/17/02 zgras2	zostera	arie	atherine	1.5
3/17/02 zgras2	zostera	arie	atherine	3.7
3/17/02 zgras2	zostera	arie	atherine	2.7
3/17/02 zgras2	zostera	arie	atherine	2.7
3/17/02 zgras2	zostera	arie	atherine	3.7
3/17/02 zgras2	zostera	arie	atherine	3
3/17/02 zgras2	zostera	arie	atherine	2.4
3/17/02 zgras2	zostera	arie	atherine	2.9
3/17/02 zgras2	zostera	arie	atherine	3.7
3/17/02 zgras2	zostera	arie	atherine	2.9
3/17/02 zgras2	zostera	arie	atherine	4.1
3/17/02 zgras2	zostera	arie	atherine	3.4
3/17/02 zgras2	zostera	arie	atherine	4.3
3/17/02 zgras2	zostera	arie	atherine	4
3/17/02 zgras2	zostera	arie	atherine	3.4
3/17/02 zgras2	zostera	arie	atherine	3.2
3/17/02 zgras2	zostera	arie	atherine	3.6
3/17/02 zgras2	zostera	arie	atherine	3.1
3/17/02 zgras2	zostera	arie	atherine	3
3/17/02 zgras2	zostera	arie	atherine	3.3
3/17/02 zgras2	zostera	arie	atherine	2.2
3/17/02 zgras2	zostera	arie	atherine	2.9
3/17/02 zgras2	zostera	arie	atherine	3.6
3/17/02 zgras2	zostera	arie	atherine	3.2
3/17/02 zgras2	zostera	arie	atherine	2.9
3/17/02 zgras2	zostera	arie	atherine	2.7
3/17/02 zgras2	zostera	arie	atherine	3.4
3/17/02 zgras2	zostera	arie	atherine	3.7
3/17/02 zgras2	zostera	arie	atherine	2.9
3/17/02 zgras2	zostera	arie	atherine	4.1
3/17/02 zgras2	zostera	arie	atherine	2.4
3/17/02 zgras2	zostera	arie	atherine	4
3/17/02 zgras2	zostera	arie	atherine	3.4
3/17/02 zgras2	zostera	arie	atherine	3.5
3/17/02 zgras2	zostera	arie	atherine	3.3
3/17/02 zgras2	zostera	arie	atherine	3.4
3/17/02 zgras2	zostera	arie	atherine	2.5
3/17/02 zgras2	zostera	arie	atherine	3.6
3/14/02 zgras2	Zostera	arie	diplodus sargus	2.4
3/14/02 zgras2	Zostera	arie	diplodus sargus	2.7
3/17/02 zgras2	zostera	arie	ethmalosa fimbriata	2.5

3/17/02 zgras2	zostera	arie	gobius minutus	2.6
3/17/02 zgras2	zostera	arie	gobius minutus	3.1
3/17/02 zgras2	zostera	arie	gobius minutus	2.2
3/17/02 zgras2	zostera	arie	gobius minutus	2.3
3/17/02 zgras2	zostera	arie	gobius minutus	2.4
3/17/02 zgras2	zostera	arie	gobius minutus	2.6
3/17/02 zgras2	zostera	arie	gobius minutus	2
3/17/02 zgras2	zostera	arie	gobius minutus	2.5
3/17/02 zgras2	zostera	arie	gobius minutus	2
3/17/02 zgras2	zostera	arie	gobius minutus	2.7
3/17/02 zgras2	zostera	arie	gobius minutus	7
3/17/02 zgras2	zostera	arie	gobius minutus	2.6
3/17/02 zgras2	zostera	arie	gobius minutus	3
3/17/02 zgras2	zostera	arie	gobius minutus	2.3
3/17/02 zgras2	zostera	arie	gobius minutus	2.8
3/17/02 zgras2	zostera	arie	gobius minutus	2.2
3/17/02 zgras2	zostera	arie	gobius minutus	2.7
3/17/02 zgras2	zostera	arie	gobius minutus	2.7
3/17/02 zgras2	zostera	arie	gobius minutus	2.6
3/17/02 zgras2	zostera	arie	liza falcipinnis	2.6
3/17/02 zgras2	zostera	arie	mugil cephalus	4.6
3/17/02 zgras2	zostera	arie	mugil cephalus	3.1
3/17/02 zgras2	zostera	arie	mugil cephalus	3.9
3/17/02 zgras2	zostera	arie	mugil cephalus	2.6
3/17/02 zgras2	zostera	arie	ponyfish	2.3
3/11/02 zgras2	Zostera	arie	ponyfish	6.3
3/11/02 zgras2	Zostera	arie	sardinella	2.1
3/17/02 zgras2	zostera	arie	sardinella aurita	2.5
3/11/02 zgras2	Zostera	arie	sardinella aurita	2.8
3/11/02 zgras2	Zostera	arie	sardinella aurita	2.9
3/17/02 zgras2	zostera	arie	sardinella aurita	2.6
3/17/02 zgras2	zostera	arie	sardinella aurita	4.6
3/17/02 zgras2	zostera	arie	sardinella aurita	2.3
3/17/02 zgras2	zostera	arie	sardinella aurita	3.5
3/17/02 zgras2	zostera	arie	sardinella aurita	2.5
3/17/02 zgras2	zostera	arie	sardinella aurita	3.7
3/17/02 zgras2	zostera	arie	sardinella aurita	2.7
3/17/02 zgras2	zostera	arie	sardinella aurita	3.1
3/17/02 zgras2	zostera	arie	sardinella aurita	3.4
3/11/02 zgras2	Zostera	arie	solea senegalensis	5.5
3/11/02 zgras2	Zostera	arie	solea senegalensis	3
3/17/02 zgras2	zostera	arie	syngnathus typle	11.2
3/17/02 zgras2	zostera	arie	syngnathus typle	2.4
3/17/02 zgras2	zostera	arie	syngnathus typle	4.6
3/14/02 zpoel	poel	arie	gobius groen	1.9
3/14/02 zpoel	poel	arie	gobius groen	2.1
3/14/02 zpoel	poel	arie	gobius groen	2.2
3/14/02 zpoel	poel	arie	gobius groen	2.3
3/14/02 zpoel	poel	arie	gobius groen	2.3
3/14/02 zpoel	poel	arie	gobius groen	2.4
3/14/02 zpoel	poel	arie	gobius groen	2.4
3/14/02 zpoel	poel	arie	gobius groen	2.4
3/14/02 zpoel	poel	arie	gobius groen	2.4
3/14/02 zpoel	poel	arie	gobius groen	2.4
3/14/02 zpoel	poel	arie	gobius groen	2.5
3/14/02 zpoel	poel	arie	gobius groen	2.6
3/14/02 zpoel	poel	arie	gobius groen	2.6
3/14/02 zpoel	poel	arie	gobius groen	2.7
3/14/02 zpoel	poel	arie	gobius groen	3
3/17/02 zpoel	poel	arie	gobius groen	2.4
3/17/02 zpoel	poel	arie	gobius groen	2.7
3/17/02 zpoel	poel	arie	gobius groen	2.7
3/17/02 zpoel	poel	arie	gobius groen	2.9
3/17/02 zpoel	poel	arie	gobius groen	2.4
3/11/02 zpoel	poel	arie	gobius minutus	2.1
3/11/02 zpoel	poel	arie	gobius minutus	2.6
3/11/02 zpoel	poel	arie	gobius minutus	3.1
3/14/02 zpoel	poel	arie	gobius minutus	2
3/14/02 zpoel	poel	arie	gobius minutus	2.1
3/14/02 zpoel	poel	arie	gobius minutus	2.1

3/14/02 zpoel	poel	arie	gobius minutus	2.1
3/14/02 zpoel	poel	arie	gobius minutus	2.2
3/14/02 zpoel	poel	arie	gobius minutus	2.3
3/14/02 zpoel	poel	arie	gobius minutus	2.4
3/14/02 zpoel	poel	arie	gobius minutus	2.4
3/14/02 zpoel	poel	arie	gobius minutus	2.5
3/14/02 zpoel	poel	arie	gobius minutus	2.6
3/14/02 zpoel	poel	arie	gobius minutus	2.6
3/14/02 zpoel	poel	arie	gobius minutus	2.7
3/14/02 zpoel	poel	arie	gobius minutus	2.7
3/14/02 zpoel	poel	arie	gobius minutus	2.7
3/14/02 zpoel	poel	arie	gobius minutus	2.7
3/14/02 zpoel	poel	arie	gobius minutus	2.7
3/14/02 zpoel	poel	arie	gobius minutus	2.7
3/14/02 zpoel	poel	arie	gobius minutus	2.8
3/14/02 zpoel	poel	arie	gobius minutus	2.8
3/14/02 zpoel	poel	arie	gobius minutus	2.9
3/14/02 zpoel	poel	arie	gobius minutus	2.9
3/14/02 zpoel	poel	arie	gobius minutus	2.9
3/14/02 zpoel	poel	arie	gobius minutus	3.4
3/14/02 zpoel	poel	arie	gobius minutus	3.7
3/14/02 zpoel	poel	arie	gobius minutus	6.4
3/14/02 zpoel	poel	arie	gobius minutus	6.7
3/14/02 zpoel	poel	arie	gobius minutus	6.9
3/14/02 zpoel	poel	arie	gobius minutus	7.2
3/17/02 zpoel	poel	arie	gobius minutus	7
3/17/02 zpoel	poel	arie	gobius minutus	2.6
3/17/02 zpoel	poel	arie	gobius minutus	2.7
3/17/02 zpoel	poel	arie	gobius minutus	2.4
3/17/02 zpoel	poel	arie	gobius minutus	2.2
3/17/02 zpoel	poel	arie	gobius minutus	2.9
3/17/02 zpoel	poel	arie	gobius minutus	4.4
3/17/02 zpoel	poel	arie	gobius minutus	3.1
3/17/02 zpoel	poel	arie	gobius minutus	4.1
3/17/02 zpoel	poel	arie	gobius minutus	3.4
3/17/02 zpoel	poel	arie	gobius minutus	2.7
3/17/02 zpoel	poel	arie	gobius minutus	2.4
3/14/02 zpoel	poel	arie	ponyfish	2.6
3/14/02 zpoel	poel	arie	ponyfish	2.7
3/14/02 zpoel	poel	arie	ponyfish	6.9
3/11/02 zpoel	poel	arie	sepia	3.2
3/14/02 zpoel	poel	arie	solea senegalensis	1.8
3/11/02 zpoel	poel	arie	sygnathus tiple	4.1
3/14/02 zpoel	poel	arie	sygnathus tiple	6.8
3/14/02 zpoel	poel	arie	sygnathus tiple	11.1
3/17/02 zpoel	poel	arie	sygnathus tiple	3.2
3/17/02 zpoel	poel	arie	sygnathus tiple	5.2
3/17/02 zpoel	poel	arie	sygnathus tiple	3.8
3/14/02 zpoel2	poel	arie	gobius groen	2.3
3/11/02 zpoel2	poel	arie	gobius minutus	2.1
3/11/02 zpoel2	poel	arie	gobius minutus	2.5
3/11/02 zpoel2	poel	arie	gobius minutus	6.3
3/11/02 zpoel2	poel	arie	gobius minutus	7.5
3/14/02 zpoel2	poel	arie	gobius minutus	1.9
3/14/02 zpoel2	poel	arie	gobius minutus	2.6
3/14/02 zpoel2	poel	arie	gobius minutus	2.7
3/14/02 zpoel2	poel	arie	gobius minutus	4.5
3/14/02 zpoel2	poel	arie	gobius minutus	6.3
3/14/02 zpoel2	poel	arie	gobius minutus	6.4
3/14/02 zpoel2	poel	arie	gobius minutus	7.3
3/17/02 zpoel2	poel	arie	gobius minutus	5.9
3/17/02 zpoel2	poel	arie	gobius minutus	2.9
3/17/02 zpoel2	poel	arie	gobius minutus	7.8
3/17/02 zpoel2	poel	arie	gobius minutus	2.9
3/17/02 zpoel2	poel	arie	gobius minutus	6.7
3/17/02 zpoel2	poel	arie	sepia	4.3
3/11/02 zpoel2	poel	arie	solea senegalensis	9
3/11/02 zpoel2	poel	arie	sygnathus kaupi	9.7
3/14/02 zpoel2	poel	arie	sygnathus kaupi	4.5
3/14/02 zpoel2	poel	arie	sygnathus kaupi	4.5
3/14/02 zpoel2	poel	arie	sygnathus kaupi	6.3
3/14/02 zpoel2	poel	arie	sygnathus kaupi	10.6
3/14/02 zpoel2	poel	arie	sygnathus kaupi	13.4

3/11/02	zpoel2	poel	arie	sygnathus kaupi	6.1
3/11/02	zpoel2	poel	arie	sygnathus type	8.9
3/11/02	zpoel2	poel	arie	sygnathus type	9.5
3/11/02	zpoel2	poel	arie	sygnathus type	10.6
3/11/02	zpoel2	poel	arie	sygnathus type	10.6
3/11/02	zpoel2	poel	arie	sygnathus type	13.6
3/14/02	zpoel2	poel	arie	sygnathus type	4.8
3/14/02	zpoel2	poel	arie	sygnathus type	5.3
3/14/02	zpoel2	poel	arie	sygnathus type	8.1
3/14/02	zpoel2	poel	arie	sygnathus type	8.8
3/14/02	zpoel2	poel	arie	sygnathus type	9.3
3/14/02	zpoel2	poel	arie	sygnathus type	9.5
3/14/02	zpoel2	poel	arie	sygnathus type	9.8
3/14/02	zpoel2	poel	arie	sygnathus type	10.4
3/14/02	zpoel2	poel	arie	sygnathus type	10.6
3/14/02	zpoel2	poel	arie	sygnathus type	11.5
3/14/02	zpoel2	poel	arie	sygnathus type	12.2
3/14/02	zpoel2	poel	arie	sygnathus type	13
3/14/02	zpoel2	poel	arie	sygnathus type	13
3/14/02	zpoel2	poel	arie	sygnathus type	13.9
3/17/02	zpoel2	poel	arie	sygnathus type	8.3
3/17/02	zpoel2	poel	arie	sygnathus type	6.4
3/17/02	zpoel2	poel	arie	sygnathus type	12.3
3/14/02	zSand	Sand	arie	diplodus sargus	1.8
3/14/02	zSand	Sand	arie	gobius groen	2.5
3/14/02	zSand	Sand	arie	gobius groen	2.6
3/14/02	zSand	Sand	arie	gobius groen	2.7
3/14/02	zSand	Sand	arie	gobius groen	2.9
3/14/02	zSand	Sand	arie	gobius groen	5.2
3/17/02	zSand	Sand	arie	gobius groen	2.3
3/17/02	zSand	Sand	arie	gobius groen	2.6
3/11/02	zSand	Sand	arie	gobius minutus	2.1
3/11/02	zSand	Sand	arie	gobius minutus	2.2
3/11/02	zSand	Sand	arie	gobius minutus	2.2
3/11/02	zSand	Sand	arie	gobius minutus	2.3
3/11/02	zSand	Sand	arie	gobius minutus	2.3
3/11/02	zSand	Sand	arie	gobius minutus	2.4
3/11/02	zSand	Sand	arie	gobius minutus	2.4
3/11/02	zSand	Sand	arie	gobius minutus	2.4
3/11/02	zSand	Sand	arie	gobius minutus	2.5
3/11/02	zSand	Sand	arie	gobius minutus	2.5
3/11/02	zSand	Sand	arie	gobius minutus	2.5
3/11/02	zSand	Sand	arie	gobius minutus	2.5
3/11/02	zSand	Sand	arie	gobius minutus	2.5
3/11/02	zSand	Sand	arie	gobius minutus	2.6
3/11/02	zSand	Sand	arie	gobius minutus	2.6
3/11/02	zSand	Sand	arie	gobius minutus	2.6
3/11/02	zSand	Sand	arie	gobius minutus	2.6
3/14/02	zSand	Sand	arie	gobius minutus	1.9
3/14/02	zSand	Sand	arie	gobius minutus	2.1
3/14/02	zSand	Sand	arie	gobius minutus	2.2
3/14/02	zSand	Sand	arie	gobius minutus	2.4
3/14/02	zSand	Sand	arie	gobius minutus	2.4
3/14/02	zSand	Sand	arie	gobius minutus	2.5
3/14/02	zSand	Sand	arie	gobius minutus	2.5
3/14/02	zSand	Sand	arie	gobius minutus	2.5
3/14/02	zSand	Sand	arie	gobius minutus	2.7
3/14/02	zSand	Sand	arie	gobius minutus	6.7
3/14/02	zSand	Sand	arie	gobius minutus	7.7
3/17/02	zSand	Sand	arie	gobius minutus	2.5
3/17/02	zSand	Sand	arie	gobius minutus	2.5
3/17/02	zSand	Sand	arie	gobius minutus	2.4
3/17/02	zSand	Sand	arie	gobius minutus	2.6
3/17/02	zSand	Sand	arie	gobius minutus	2.9
3/17/02	zSand	Sand	arie	gobius minutus	2.6
3/14/02	zSand	Sand	arie	sepia	1.3
3/11/02	zSand	Sand	arie	solea senegalensis	5.4
3/14/02	zSand	Sand	arie	sygnathus kaupi	15.2
3/14/02	zSand	Sand	arie	sygnathus type	4.6
3/14/02	zSand	Sand	arie	sygnathus type	7.9
3/14/02	zSand	Sand	arie	sygnathus type	8.5
3/14/02	zSand	Sand	arie	sygnathus type	11.6
3/14/02	zSand2	Sand	arie	gobius groen	2.2

3/14/02 zSand2	Sand	arie	gobius groen	2.7
3/14/02 zSand2	Sand	arie	gobius groen	2.7
3/14/02 zSand2	Sand	arie	gobius groen	2.8
3/17/02 zSand2	Sand	arie	gobius groen	2.2
3/17/02 zSand2	Sand	arie	gobius groen	2.4
3/17/02 zSand2	Sand	arie	gobius groen	2.7
3/17/02 zSand2	Sand	arie	gobius groen	2.3
3/17/02 zSand2	Sand	arie	gobius groen	1.7
3/17/02 zSand2	Sand	arie	gobius groen	2.3
3/17/02 zSand2	Sand	arie	gobius groen	1.9
3/17/02 zSand2	Sand	arie	gobius groen	1.7
3/17/02 zSand2	Sand	arie	gobius groen	3.1
3/11/02 zSand2	Sand	arie	gobius minutus	1.4
3/11/02 zSand2	Sand	arie	gobius minutus	1.4
3/11/02 zSand2	Sand	arie	gobius minutus	1.5
3/11/02 zSand2	Sand	arie	gobius minutus	1.8
3/11/02 zSand2	Sand	arie	gobius minutus	1.9
3/11/02 zSand2	Sand	arie	gobius minutus	2
3/11/02 zSand2	Sand	arie	gobius minutus	2
3/11/02 zSand2	Sand	arie	gobius minutus	2
3/11/02 zSand2	Sand	arie	gobius minutus	2
3/11/02 zSand2	Sand	arie	gobius minutus	2.1
3/11/02 zSand2	Sand	arie	gobius minutus	2.1
3/11/02 zSand2	Sand	arie	gobius minutus	2.1
3/11/02 zSand2	Sand	arie	gobius minutus	2.2
3/11/02 zSand2	Sand	arie	gobius minutus	2.2
3/11/02 zSand2	Sand	arie	gobius minutus	2.2
3/11/02 zSand2	Sand	arie	gobius minutus	2.3
3/11/02 zSand2	Sand	arie	gobius minutus	2.3
3/11/02 zSand2	Sand	arie	gobius minutus	2.4
3/11/02 zSand2	Sand	arie	gobius minutus	2.4
3/11/02 zSand2	Sand	arie	gobius minutus	2.5
3/11/02 zSand2	Sand	arie	gobius minutus	2.7
3/11/02 zSand2	Sand	arie	gobius minutus	2.7
3/11/02 zSand2	Sand	arie	gobius minutus	2.8
3/11/02 zSand2	Sand	arie	gobius minutus	2.9
3/11/02 zSand2	Sand	arie	gobius minutus	3
3/11/02 zSand2	Sand	arie	gobius minutus	3.1
3/14/02 zSand2	Sand	arie	gobius minutus	2.1
3/14/02 zSand2	Sand	arie	gobius minutus	2.2
3/14/02 zSand2	Sand	arie	gobius minutus	2.4
3/14/02 zSand2	Sand	arie	gobius minutus	2.5
3/14/02 zSand2	Sand	arie	gobius minutus	2.6
3/14/02 zSand2	Sand	arie	gobius minutus	3
3/17/02 zSand2	Sand	arie	gobius minutus	2.7
3/17/02 zSand2	Sand	arie	gobius minutus	3.1
3/17/02 zSand2	Sand	arie	gobius minutus	1.9
3/17/02 zSand2	Sand	arie	gobius minutus	2.4
3/11/02 zSand2	Sand	arie	solea senegalensis	1.1
3/11/02 zSand2	Sand	arie	solea senegalensis	1.7
3/11/02 zSand2	Sand	arie	solea senegalensis	2
3/11/02 zSand2	Sand	arie	solea senegalensis	2
3/14/02 zSand2	Sand	arie	solea senegalensis	5.6
3/17/02 zSand2	Sand	arie	solea senegalensis	1.9
3/11/02 zSand2	Sand	arie	syngnathus typle	11
3/11/02 zSand2	Sand	arie	syngnathus typle	11.1
3/17/02 bcymgeul	Cymnodosea	francesc	Arius latiscutatus	45
3/17/02 bcymgeul	Cymnodosea	francesc	atherine	1.1
2/7/02 bcymgeul	Gully Cymodocea	francesc	Ephippion guttiferum	11
2/27/02 bcymgeul	Gully Cymodocea	francesc	epinephelus anius	18.5
3/18/02 bcymgeul	Cymnodosea	francesc	ethmalosa fimbriata	1.7
1/29/02 bcymgeul	Gully Cymodocea	francesc	gobius groen	2.6
3/17/02 bcymgeul	Cymnodosea	francesc	gobius groen	3.8
3/17/02 bcymgeul	Cymnodosea	francesc	gobius groen	1.6
3/17/02 bcymgeul	Cymnodosea	francesc	gobius groen	2.1
3/17/02 bcymgeul	Cymnodosea	francesc	gobius groen	2.2
3/17/02 bcymgeul	Cymnodosea	francesc	gobius groen	2.9
3/17/02 bcymgeul	Cymnodosea	francesc	gobius groen	1.5
3/17/02 bcymgeul	Cymnodosea	francesc	gobius groen	4.3

3/17/02	bcymgeul	Cymnodosea	francesc	gobius minutus	2.7
3/17/02	bcymgeul	Cymnodosea	francesc	gobius minutus	3.6
3/17/02	bcymgeul	Cymnodosea	francesc	gobius minutus	3.2
3/17/02	bcymgeul	Cymnodosea	francesc	gobius minutus	2.6
3/17/02	bcymgeul	Cymnodosea	francesc	gobius minutus	2.7
3/17/02	bcymgeul	Cymnodosea	francesc	gobius minutus	3.4
3/17/02	bcymgeul	Cymnodosea	francesc	gobius minutus	2.4
3/17/02	bcymgeul	Cymnodosea	francesc	gobius minutus	7.5
3/18/02	bcymgeul	Cymnodosea	francesc	gobius minutus	6.2
3/18/02	bcymgeul	Cymnodosea	francesc	gobius minutus	2.9
3/18/02	bcymgeul	Cymnodosea	francesc	gobius minutus	2.8
3/18/02	bcymgeul	Cymnodosea	francesc	gobius minutus	2.7
3/18/02	bcymgeul	Cymnodosea	francesc	gobius minutus	2.8
3/18/02	bcymgeul	Cymnodosea	francesc	gobius minutus	3.1
3/18/02	bcymgeul	Cymnodosea	francesc	gobius minutus	2.5
3/18/02	bcymgeul	Gully Cymodocea	francesc	Hippocampus hippocampus	2
2/7/02	bcymgeul	Gully Cymodocea	francesc	sepia	1.2
1/29/02	bcymgeul	Gully Cymodocea	francesc	sepia	5.5
1/29/02	bcymgeul	Gully Cymodocea	francesc	sepia	0.8
2/7/02	bcymgeul	Gully Cymodocea	francesc	sepia	1
2/7/02	bcymgeul	Gully Cymodocea	francesc	sepia	15
2/27/02	bcymgeul	Gully Cymodocea	francesc	sepia	0.6
2/27/02	bcymgeul	Gully Cymodocea	francesc	sepia	0.9
2/28/02	bcymgeul	Gully Cymodocea	francesc	sepia	0.5
2/28/02	bcymgeul	Gully Cymodocea	francesc	sepia	0.7
3/1/02	bcymgeul	Gully Cymodocea	francesc	sepia	1.1
3/17/02	bcymgeul	Cymnodosea	francesc	sepia	0.9
3/17/02	bcymgeul	Cymnodosea	francesc	sepia	0.8
3/17/02	bcymgeul	Cymnodosea	francesc	sepia	0.7
3/17/02	bcymgeul	Cymnodosea	francesc	sepia	6.3
3/17/02	bcymgeul	Cymnodosea	francesc	sepia	1.9
3/17/02	bcymgeul	Cymnodosea	francesc	sepia	1.3
2/27/02	bcymgeul	Gully Cymodocea	francesc	stepholepis hispidus	4.4
2/27/02	bcymgeul	Gully Cymodocea	francesc	stepholepis hispidus	4.7
2/27/02	bcymgeul	Gully Cymodocea	francesc	stepholepis hispidus	5.8
2/27/02	bcymgeul	Gully Cymodocea	francesc	stepholepis hispidus	6.8
2/27/02	bcymgeul	Gully Cymodocea	francesc	stepholepis hispidus	10
2/27/02	bcymgeul	Gully Cymodocea	francesc	stepholepis hispidus	10.6
3/17/02	bcymgeul	Cymnodosea	francesc	Stepholepis hispidus	5.6
1/29/02	bcymgeul	Gully Cymodocea	francesc	sygnathus kaupi	21
2/7/02	bcymgeul	Gully Cymodocea	francesc	sygnathus kaupi	23.5
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus kaupi	8.3
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus kaupi	16.4
3/17/02	bcymgeul	Cymnodosea	francesc	sygnathus kaupi	15.6
1/29/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	6.4
1/29/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	10.6
1/29/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	12.9
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	4.7
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	5.3
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	6.5
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	7.3
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	8.7
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	9.7
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	9.8
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	10
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	10
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	10.1
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	10.4
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	10.6
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	10.7
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	10.8
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	10.9
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	10.9
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	11.5
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	11.7
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	12.1
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	12.2
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	12.2
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	12.3
2/7/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	12.9

2/7/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	13
2/7/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	13.3
2/7/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	14
2/7/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	14
2/7/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	14.1
2/7/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	14.2
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	5.8
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	6.6
2/27/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	8.5
2/28/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	8.2
2/28/02	bcymgeul	Gully Cymodocea	francesc	sygnathus type	10.5
3/18/02	bcymgeul	Cymnodosea	francesc	sygnathus type	14.7
3/18/02	bcymgeul	Cymnodosea	francesc	sygnathus type	11
3/18/02	bcymgeul	Cymnodosea	francesc	sygnathus type	14.9
3/18/02	bcymgeul	Cymnodosea	francesc	sygnathus type	15
3/18/02	bcymgeul	Cymnodosea	francesc	sygnathus type	11.8
3/18/02	bcymgeul	Cymnodosea	francesc	sygnathus type	9.7
3/18/02	bcymgeul	Cymnodosea	francesc	sygnathus type	5.9
3/18/02	bcymgeul	Cymnodosea	francesc	sygnathus type	7.1
3/18/02	bcymgeul	Cymnodosea	francesc	sygnathus type	9.5
1/29/02	bcymgeul	Gully Cymodocea	francesc	tilapia	12
2/28/02	bgras	Zostera	francesc	atherine	2.7
2/11/02	bgras	Zostera	francesc	dicentrarchus punctatus	12.6
2/28/02	bgras	Zostera	francesc	diploodus sargus	2.5
2/28/02	bgras	Zostera	francesc	diploodus sargus	2.9
2/11/02	bgras	Zostera	francesc	gobius minutus	1.4
2/11/02	bgras	Zostera	francesc	gobius minutus	2.1
2/11/02	bgras	Zostera	francesc	gobius minutus	2.2
2/11/02	bgras	Zostera	francesc	gobius minutus	2.3
2/11/02	bgras	Zostera	francesc	gobius minutus	2.3
2/11/02	bgras	Zostera	francesc	gobius minutus	2.5
2/11/02	bgras	Zostera	francesc	gobius minutus	2.6
2/11/02	bgras	Zostera	francesc	gobius minutus	2.6
2/11/02	bgras	Zostera	francesc	gobius minutus	2.7
2/11/02	bgras	Zostera	francesc	gobius minutus	2.7
2/11/02	bgras	Zostera	francesc	gobius minutus	2.8
2/11/02	bgras	Zostera	francesc	gobius minutus	2.9
2/24/02	bgras	Zostera	francesc	gobius minutus	1.7
2/24/02	bgras	Zostera	francesc	gobius minutus	2.2
2/24/02	bgras	Zostera	francesc	gobius minutus	2.3
2/24/02	bgras	Zostera	francesc	gobius minutus	2.3
2/24/02	bgras	Zostera	francesc	gobius minutus	2.5
2/24/02	bgras	Zostera	francesc	gobius minutus	2.5
2/24/02	bgras	Zostera	francesc	gobius minutus	2.6
2/24/02	bgras	Zostera	francesc	gobius minutus	2.6
2/24/02	bgras	Zostera	francesc	gobius minutus	2.7
2/24/02	bgras	Zostera	francesc	gobius minutus	2.7
2/24/02	bgras	Zostera	francesc	gobius minutus	2.7
2/24/02	bgras	Zostera	francesc	gobius minutus	2.8
2/24/02	bgras	Zostera	francesc	gobius minutus	2.8
2/24/02	bgras	Zostera	francesc	gobius minutus	2.8
2/24/02	bgras	Zostera	francesc	gobius minutus	2.9
2/24/02	bgras	Zostera	francesc	gobius minutus	2.9
2/24/02	bgras	Zostera	francesc	gobius minutus	2.9
2/24/02	bgras	Zostera	francesc	gobius minutus	3
2/24/02	bgras	Zostera	francesc	gobius minutus	3
2/24/02	bgras	Zostera	francesc	gobius minutus	3
2/24/02	bgras	Zostera	francesc	gobius minutus	3.1
2/24/02	bgras	Zostera	francesc	gobius minutus	3.3
2/28/02	bgras	Zostera	francesc	gobius minutus	2.2
2/28/02	bgras	Zostera	francesc	gobius minutus	2.2
2/28/02	bgras	Zostera	francesc	gobius minutus	2.4
2/28/02	bgras	Zostera	francesc	gobius minutus	2.6
2/28/02	bgras	Zostera	francesc	gobius minutus	2.7
2/28/02	bgras	Zostera	francesc	gobius minutus	2.7
2/28/02	bgras	Zostera	francesc	gobius minutus	2.7

2/7/02 bzgeul	Gully Zostera	francesc	sygnathus type	9.1
2/7/02 bzgeul	Gully Zostera	francesc	sygnathus type	10.5
2/7/02 bzgeul	Gully Zostera	francesc	sygnathus type	11.2
3/1/02 bzgeul	Gully Zostera	francesc	sygnathus type	5.9
3/1/02 bzgeul	Gully Zostera	francesc	sygnathus type	8.5
3/13/02 cymgeul	Gully Cymodocea	francesc	atherine	1.1
3/13/02 cymgeul	Gully Cymodocea	francesc	atherine	1.2
3/13/02 cymgeul	Gully Cymodocea	francesc	atherine	1.3
3/13/02 cymgeul	Gully Cymodocea	francesc	atherine	1.4
3/13/02 cymgeul	Gully Cymodocea	francesc	atherine	1.6
3/13/02 cymgeul	Gully Cymodocea	francesc	atherine	1.7
3/13/02 cymgeul	Gully Cymodocea	francesc	diplodus sargus	2.1
3/13/02 cymgeul	Gully Cymodocea	francesc	diplodus sargus	3.1
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius groen	2.1
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius groen	2.4
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius groen	2.4
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius minutus	2.3
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius minutus	2.4
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius minutus	2.4
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius minutus	2.5
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius minutus	2.5
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius minutus	2.6
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius minutus	2.6
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius minutus	2.9
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius minutus	3
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius minutus	3
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius minutus	3.1
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius minutus	3.2
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius minutus	6.5
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius minutus	6.7
3/13/02 cymgeul	Gully Cymodocea	francesc	gobius minutus	6.9
3/13/02 cymgeul	Gully Cymodocea	francesc	sepia	2.4
3/13/02 cymgeul	Gully Cymodocea	francesc	sepia	2.5
3/13/02 cymgeul	Gully Cymodocea	francesc	sepia	9.3
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus kaupi	1.4
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus kaupi	1.4
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus kaupi	1.5
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus kaupi	5
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus kaupi	5.6
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus kaupi	6.2
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus kaupi	8.6
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus kaupi	12.7
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus type	4.5
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus type	4.8
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus type	5.3
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus type	5.5
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus type	5.8
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus type	5.8
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus type	8.1
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus type	8.2
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus type	8.5
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus type	9.1
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus type	11
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus type	11.9
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus type	12.7
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus type	13.4
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus type	13.5
3/13/02 cymgeul	Gully Cymodocea	francesc	sygnathus type	17.4
2/11/02 gras	Zostera	francesc	sygnathus type	6.6
2/11/02 gras	Zostera	francesc	tilapia	6.4

totaal aantal individuen

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