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Feeding habits of the lizardfish *Synodus saurus* (Linnaeus, 1758) (Actinopterygii: Synodontidae) from the Azores

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Abstract
The feeding habits of the lizardfish *Synodus saurus*, were studied in the Azores archipelago, north-eastern Atlantic. Factors examined were diet composition, prey importance, season, fish size, feeding strategy and prey orientation in the oesophagus. The stomach contents of 308 specimens were collected and analyzed between March and November 2000. *Synodus saurus* is common in Azorean waters. Though it prefers small gregarious pelagic fish, it also feeds on epibenthic and benthic prey. We found the following prey in its diet: 9 families of teleostean fishes (Carangidae, Clupeidae, Cynoglossidae, Gobiidae, Labridae, Myctophidae, Sparidae, Sphyraenidae and Synodontidae), two families of crustaceans (Cymothoidae and Scyllaridae) and one of cephalopods (Loliginidae). The European pilchard, *Sardina pilchardus* was the commonest prey. The diet of the lizardfish varies with the season, showing the greatest diversity (given by the Shannon-Wiener index) in October. There is a significant correlation with the sea temperature. The size of the predator is not correlated to the size of its prey. However, we observed a positive correlation between the size of the predator and the quantity of food in its stomach. The orientation of the prey in the oesophagus may partly depend on the predator's size. However, analysis of the stomach contents provided no information on the selection of prey.

Zusammenfassung
Das Fressverhalten vom Eidechsenfisch *Synodus saurus* wurde im Azoren Archipel (nordöstlicher Atlantik) erforscht. Die untersuchten Faktoren waren: Zusammensetzung der Nahrung, Wichtigkeit der Beutetiere, Jahreszeit, Fischgröße, Fressstrategie und Orientierung der Beute in der Speiseröhre. In der Zeit von März bis November 2000 wurde der Mageninhalt von 308 Exemplaren gesammelt und analysiert. *Synodus saurus* ist in den Gewässern der Azoren weit verbreitet. Obwohl diese Art kleine pelagische Schwarmfische vorzieht, frisst sie auch auf Substraten des Gewässerbodens lebende- sowie direkt auf dem Boden lebende Beutetiere. Wir fanden die folgende Beutetierarten in ihrer Nahrung: 9 Familien von Teleostfischen (Carangidae, Cynoglossidae, Clupeidae, Gobiidae, Labridae, Myctophidae, Sparidae, Sphyraenidae und Synodontidae), zwei Familien von Krebstieren (Cymothoidae und Scyllaridae), sowie eine Cephalopoden-Familie (Loliginidae). Die Europäische Sardine, *Sardina pilchardus* war das am meisten vorkommende Beutetier. Die Nahrung der Eidechsenfische variiert jahreszeitlich und zeigt die unterschiedlichste Mannigfaltigkeit (nach dem Shannon-Wiener Index) im Oktober. Es besteht eine bedeutende Wechselbeziehung mit der Meerestemperatur. Die Größe des Räubers korreliert nicht mit der Größe seiner Beute. Wir haben jedoch eine positive Korrelation zwischen der Größe des Räubers und der Nahrungsmenge in seinem Magen feststellen können. Die Orientierung der Beute in der Speiseröhre hängt teilweise mit der Größe des Räubers zusammen. Jedoch Analysen des Mageninhalts ergaben keine Informationen über die Auswahl der Beute.

Résumé
Les habitudes alimentaires du poisson-lézard *Synodus saurus* ont été étudiées dans l'archipel des Açores, au nord-est de l'Atlantique. Facteurs analysés: composition du régime, importance des proies, saison, taille des poissons, stratégie alimentaire et orientation de la proie dans l'oesophage. Le contenu stomacal de 308 spécimens a été collecté et analysé de mars à novembre 2000. *Synodus saurus* est commun dans les eaux des Açores. Malgré sa préférence pour de petits poissons pélagiques grégaires, il se nourrit aussi de proies épibenthiques et benthiques. Nous avons identifié les proies suivantes dans le régime: 9 familles de poissons téléostéens (Carangidae, Clupeidae, Cynoglossidae, Gobiidae, Labridae, Myctophidae, Sparidae, Sphyraenidae et Synodontidae), deux familles de crustacés (Cymothoidae et Scyllaridae) et une de cépha-

lopodes (Loliginidae). Le pilchard européen, *Sardinia pilchardus*, était la proie la plus fréquente. Le régime du poisson-lézard varie en fonction de la saison, avec un pic de diversité (selon l'index Shannon-Wiener) en octobre. Il existe une corrélation significative avec la température de la mer. La taille du prédateur n'est pas corrélée à celle de sa proie. Pourtant, nous avons constaté une corrélation positive entre la taille du prédateur et la quantité de nourriture dans son estomac. L'orientation de la proie dans l'oesophage peut dépendre en partie de la taille du prédateur. Néanmoins, l'analyse des contenus stomacaux ne donne pas d'information sur la sélection des proies.

Sommario

Sono descritte le abitudini alimentari del pesce lucertola *Synodus saurus* nell'arcipelago delle Azzorre, Atlantico nord-orientale. I fattori esaminati sono stati: la composizione della dieta, l'importanza della preda, la stagione, le dimensioni, la strategia e l'orientamento della preda nell'esofago. È stato analizzato il contenuto gastrico di 308 esemplari raccolti nel periodo marzo-novembre 2000. *Synodus saurus* è piuttosto comune nelle Azzorre. Sebbene preferisca piccoli pesci pelagici gregari, si nutre anche di specie bentoniche e epibentoniche. Sono state individuate le seguenti prede: 9 famiglie si pesci teleostei (Carangidae, Clupeidae, Cynoglossidae, Gobiidae, Labridae, Myctophidae, Sparidae, Sphyraenidae e Synodontidae), due famiglie di crostacei (Cymothoidae e Scyllaridae) e una di cefalopodi (Loliginidae). La sardina europea, *Sardina pilchardus*, era la preda più comune. La dieta di *S. aureus* cambiava con le stagioni, con una maggiore diversità (indice di Shannon-Wiener) in ottobre. Si osservava inoltre una correlazione significativa con la temperatura del mare. La taglia del predatore non risultava invece correlata con quella della preda. Tuttavia, si osservava una correlazione positiva tra la dimensione del predatore e la quantità di cibo nello stomaco. L'orientamento della preda nell'esofago può in parte dipendere dalla taglia del predatore. Tuttavia, l'analisi del contenuto dello stomaco non ha fornito informazioni sulla selezione della preda.

Introduction

The lizardfish, *Synodus saurus* (Linnaeus, 1758) is a common epibenthic fish in the waters around the Azores (Santos *et al.*, 1997). Its feeding habits have only been studied in the Mediterranean (Golani, 1993). More recently, studies on its predatory and agonistic behaviour (Soares *et al.*, 2002) and its reproduction (Sousa *et al.*, 2003) have been carried out on populations in the Azores. The species occurs in Madeira, the Canaries, Cape Verde, the Mediterranean, and off the Moroccan coast. In the western Atlantic it is known from Bermuda, the Bahamas and the Leeward Islands (Sulak, 1986).

Synodus saurus is commonly found on sandy bottoms in depths from less than 20 m down to 400 m (Sulak, 1983). It has a small head with medium-sized eyes, and its colour pattern (Fig. 1) provides a very effective camouflage. Despite spending most of its time buried in the sand, the lizardfish is a highly mobile predator, capable of capturing pelagic fishes in midwater (Soares *et al.*, 2002). In the Azores, its reproduction is continuous, peaking in the summer (Sousa *et al.*, 2003).

This work describes the diet of *Synodus saurus* in the Azores and discusses data on diet shifts, the relationship between predator size and food taken, and the orientation of prey in the oesophagus. It is one of a series of papers describing the diet of several coastal species from the Azores, aimed at achieving better understanding of food webs and predator-prey relationships (e.g., Barreiros & Santos, 1998; Morato *et al.*, 2000; Barreiros *et al.*, 2002, 2003).

Materials and Methods

Study area and sampling procedure: *S. saurus* was sampled around Terceira Island, in the Azores (Fig. 2). A total of 308 fish were collected by spear fishing between March and November, 2000. This collection method has the advantage of avoiding the regurgitation of stomach contents (Bowen, 1983; Morato *et al.*, 2000), and facilitating the selection of specimens within a given species since it avoids any by-catch (Derbal & Kara, 1996).

The specimens were frozen and measured to the nearest millimetre (total length-TL) and weighed to the nearest 0.1 g. The digestive tract was removed and the fullness of the stomach recorded using a semi-quantitative scale. The stomachs were fixed in 10% buffered formalin and preserved in 70% alcohol. The empty stomachs and stomach contents were weighed. Food items were identified down to the lowest possible taxonomic level. To minimize the underestimation of small, soft prey, the utmost care was given to the identification of even the smallest fragments. Prey items were weighed to the nearest 0.01 g after removing the surface water and, when undigested, items were measured (L) and allocated to a length group. The number of items of prey and their orientation in the oesophagus were also recorded. Stomach contents that contained more than one type of prey were described as "mixed" if the orientation of the prey differed (L'Abée-Lund, 1996). The orientation of prey in advanced states of digestion was impossible to establish and was described as "undetermined".

Stomach content analysis: The quantitative importance of different prey in the diet was expressed as follows (Berg, 1979; Hyslop, 1980):

Vacuity index *(VI)*, as the percentage of empty stomachs;

Repletion index *(RI)*, as the percentage of stomachs with food;

Table I. Percentage contribution of prey groups and species to the diet of *S. saurus*.

Prey category	*n*	*Cn*	*Cw*	*F*	*IRI*
Fish					
Sardina pilchardus	196	32.9	31.6	42.8	2759.7
Sphyraena viridensis	67	11.3	1.2	4	49.5
Pagellus acarne	9	1.5	6.3	3.5	27.3
Coris julis	11	1.8	12.7	4	58
Symphodus mediterraneus	1	0.2	3.4	0.5	1.8
Trachurus picturatus	3	0.5	7.1	1.5	11.3
Gobius paganellus	4	0.7	1.1	2	3.6
Synodus saurus	3	0.5	7.1	1.5	11.4
Symphurus nigrescens	4	0.7	0.1	1	0.8
Mullus surmuletus	1	0.2	0.1	0.5	0.1
Unidentified Myctophidae	2	0.3	0.1	0.5	0.2
Unidentified Labridae	2	0.3	0.3	1	0.7
Unidentified Sparidae	1	1.7	2.2	0.5	1.2
Unidentified Pleuronectiformes	1	0.2	0.05	0.5	0.1
Unidentified teleostei	260	43.6	11.6	11.6	3405.8
Total fish	**565**	**96.3**	**84.9**	**125.5**	**6331.5**
Crustacea					
Anilocra physodes	28	4.7	0.6	2.8	45.5
Scyllarus arctus	1	0.2	0.06	0.01	0.1
Total crustaceans	**29**	**4.9**	**0.7**	**2.8**	**45.6**
Cephalopoda					
Loligo forbesi	2	0.3	0.7	1	1
Total cephalopods	**2**	**0.3**	**0.7**	**1**	**1**
No. of stomachs examined	308				
No. of empty stomachs	107				
Mean fish total length (mm)	281.5				
Mean stomach content weight (g)	3.9				
Mean number of prey items per stomach	1.9				

Fig. 1. Camouflaged specimen of *S. saurus*. Photo by Peter Wirtz, ©imagDOP

Percent frequency of occurrence (F), based on the number of stomachs in which a food item was found, expressed as a percentage of the total number of non-empty stomachs;

Percent numerical abundance (C_n), the number of each prey item in all non-empty stomachs in a sample, expressed as the percentage of the total number of food items in all stomachs in a sample;

Percent gravimetric composition (C_w), the wet weight of each prey item, expressed as the percentage of the total weight of the stomach contents in a sample.

Importance of prey items was identified using the index of relative importance (*IRI*) of Pinkas *et al.* (1971): $IRI = (C_n + C_w) \times F$.

The IRI is known to bias results in some cases (Tirasin & Jorgensen, 1999). However, since one prey was clearly dominant in the sample, it was justifiable in our case.

Niche breadth for the utilization of food resources was calculated according to the Shannon-Wiener index (Krebs, 1989; Labropoulou *et al.*, 1998):

$$H' = \sum_{i=1}^{S} (pi \log epi)$$

where *pi* is the proportion of a specific prey category for the *n* categories of prey listed. The Shannon-Wiener index value increases with the number of species. Species evenness was determined with Pielou´s evenness index (Pielou, 1977):

$$J' = H'/\log_e(S)$$

where H' is the Shannon-Wiener index and S is the total number of species.

Correlations (Spearman rank) were tested between different pairs of variables: vacuity index and water temperature, mean stomach content weight and predator length, mean prey length and predator length and mean prey weight and predator length. All the previous variable relationships were also tested by simple linear regression (Zar, 1996). Differences in prey orientation in the oesophagus were tested with the Sign-Test, according to the non-parametric characteristics of the studied data (Ludwig & Reynolds, 1988; Krebs, 1989).

Seasonal changes in diet were analyzed by the nine sampling months: March ($n = 14$), April ($n = 21$), May ($n = 42$), June ($n = 36$), July ($n = 23$), August ($n = 41$), September ($n = 56$), October ($n = 47$) and November ($n = 28$). The total lengths of the fish examined ranged from 150 to 460 mm; the mean length was 281.5 and the standard deviation (SD) 55.4. Variations within fish size were examined by allocating predator lengths to five size groups (TL): 150-199 mm ($n = 16$); 200-249 mm ($n = 85$); 250-299 mm ($n = 84$); 300-349 mm ($n = 82$); > 350 mm ($n = 41$).

Feeding strategy was calculated using the new Amundsen *et al.* (1996) approach to the Costello (1990) method, which combines the frequency of occurrence (F_i) of a given prey (expressed by the number of stomachs in which that prey occurs) and the prey specific abundance (P_i) (as the percentage of a prey in only those predators in which it occurs):

$$F_i = (N_i/Nt) \times 100$$

$$P_i = (\Sigma S_i/\Sigma S_t) \times 100$$

where N_i is the number of predators with prey i in their stomach, N is the total number of predators with stomach contents, S_i the number of stomachs with prey i, and S_t the total prey in the stomachs containing prey i. The percent abundance, increasing along the diagonal from the lower left to the upper right corner, pro-

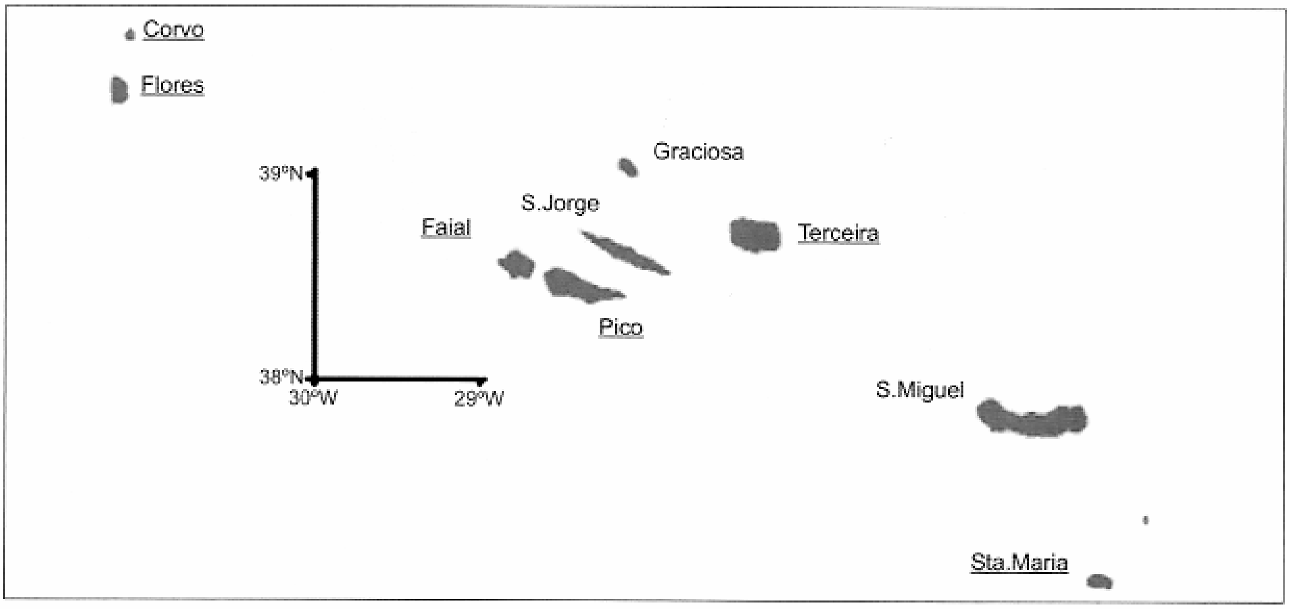

Fig. 2. The Azores archipelago, north-east Atlantic.

vides a measure of prey importance, with dominant prey at the upper and end, rare or unimportant prey at the lower end. The vertical axis represents the feeding strategy of the predator, in terms of specialization or generalization (Amundsen *et al.*, 1996).

Results

Diet composition and prey importance: Of the total 308 stomachs analyzed, 201 (65.3 %) contained food. In these, 596 prey items belonging to three groups (fish, crustaceans and cephalopods) were identified. Fish (13 species) were the most important group.

The European pilchard, *Sardina pilchardus* was the most important prey, while the yellowmouth barracuda, *Sphyraena viridensis*, and the parasitic isopod, *Anilocra physodes*, were also found in high numbers (Table I). However, their weight importance was comparatively low. The labrid *Coris julis* (L.) was the second most important prey according to its C_w value. The species *A. physodes*, besides being part of this predator's diet, is also an ectoparasite and individuals ranging in size from 2 to 35 mm were found attached to *S. saurus*' mouth at a frequency of 1.3 (SD = 0.06) per fish. The relative importance of the prey groups and prey species according to the calculated values of the *IRI* are also given in Table I.

Seasonal variations in prey composition: The distribution of food items varied with the season (Fig. 3). Initially, the frequency increased, with a maximum value in April (133 items). Only one species, *S. pilchardus*, was found in all samples. *Sphyraena viridensis* occurred only in the first two months. Diversity increased in the final months.

The values of the vacuity index (VI) and sea water temperature, for the analyzed months (Fig. 4) are weakly correlated ($r_s = 0.74$; $p < 0.05$).

The median number of prey found in each stomach was higher in the first months of sampling. The species total was greatest in October. The monthly weight was quite variable but also reached a maximum in October (Table II).

Diet diversity was higher in the later sampling months, particularly October (*H´*= 0.758) and August (*H´*= 0.675). The last sampling month showed lower diversity (*H´*= 0.326). The evenness distribution was similar to *H'*. Its maximum value was observed in October (*J´*= 0.785), and its minimum in November (*J´*= 0.466). Neither diversity nor evenness values were correlated with the water temperature ($p > 0.05$).

Diet vs. fish size: Although not significantly correlated ($p > 0.05$), the repletion index (RI) shows some ontogenetic variation. In the first two length groups (100-149 mm and 150-199 mm) it was almost the same, and the highest value was reached in the 250-299 mm group.

The mean weight of the stomach contents increased with the size of the predator, up to a length of 330 mm, when it reached a maximum (Fig. 5). Mean stomach content weight increased as the fish grew (predator TL) with a significant positive linear relation ($r^2 = 0.91$; $r_s = 0.82$; $p < 0.05$). Also, the frequency with which each prey species was found in the stomachs differed with predator length (Fig. 6). Maximum prey frequency was recorded in the 249 – 299 mm group, with 275 items. *Sardina pilchardus* was found in most of the groups.

Predator-prey length and weight relationship: The minimum prey size was constant whatever the

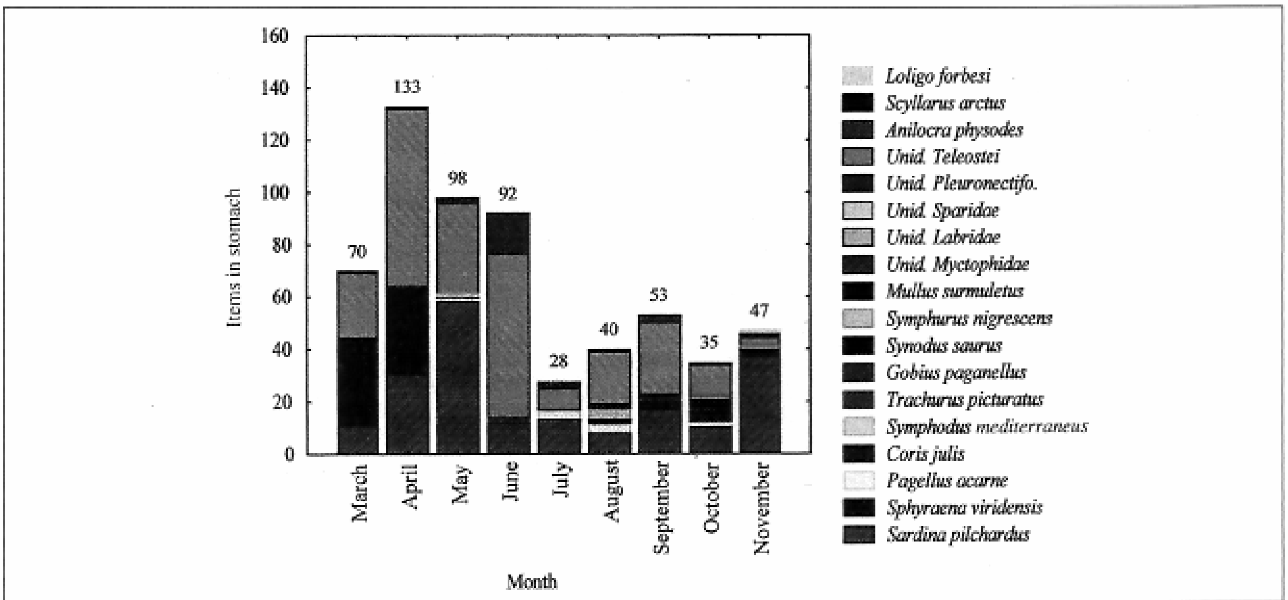

Fig. 3. Specific prey frequency per month.

Table II. Seasonal variations in terms of mean number of prey, mean weight (g) and the number of species recorded in each month.

Months	Mean nº prey per stomach	Mean prey weight per stomach (g)	Species recorded
March	5	0.34	4
April	6.34	0.27	4
May	2.36	1.66	6
June	2.55	0.96	5
July	1.22	2.98	6
August	0.97	0.99	9
Septemb.	0.95	3.98	7
October	0.74	5.53	10
November	1.69	3.64	6

size of the predator (Fig. 7). Maximum prey length did not correspond to maximum predator size. Nevertheless, a significant progression between these variables can be seen.

Mean prey length increased with predator size (predator SL), with a positive linear relation between both variables ($r^2 = 0.85$; $r_s = 0.83$; $p < 0.05$). As in the previous correlation, mean prey weight was also directly related to predator length. In this particular case, the linear relation is highly significant ($r^2 = 0.90$; $r_s = 0.94$; $p < 0.01$).

Feeding Strategy: The species shown at upper left in the diagram are consumed by a limited fraction of the predators (Fig. 8), which indicates a high between-phenotype component. These are: *C. julis*, *Pagellus acarne*, *S. saurus*, *Trachurus picturatus*, *Loligo forbesi*, *Symphodus mediterraneus*, *Symphurus nigrescens*, unidentified Sparidae and unidentified Pleuronectiformes. The prey species shown lower left in the diagram were occasionally eaten. *Sardina pilchardus* is the only dominant item in the lizardfish's diet (population specialization).

Prey orientation: *S. saurus* feeds on several types of prey, with and/or without spines, pelagic and/or benthic species. In all, 51% of *S. saurus*´s prey were eaten tail-first. Only 13.7% were eaten head-first. However, some species were always eaten head-first: *S. mediterraneus, Gobius paganellus, S. saurus* and *L. forbesi* (Table III). The majority of stomachs contained one (27.6%), two (8%) or three (5.6%) prey, but up to 30 items were recorded.

Discussion

This study indicates that the lizardfish from the Azores archipelago feeds primarily on small gregarious pelagic fish, such as *S. pilchardus*, *S. viridensis* and *T. picturatus*. The presence of juvenile *S. viridensis* in the stomach contents of an epibenthic species has never been reported before. *S. saurus* also feeds on epibenthic and benthic species such as *C. julis* and *P. acarne*. Cannibalism, observed in this predator, is a surprisingly common form of predation in fish, presumably because typically the young are so small

Table III. *S. saurus:* prey orientation in oesophagus.

	Orientation		
	Tail first	Head first	Undetermined
Sardina pilchardus	139	32	24
Sphyraena viridensis	39	8	20
Pagellus acarne	8	--	--
Coris julis	7	2	--
Symphodus mediterraneus	--	1	--
Trachurus picturatus	2	1	--
Gobius paganellus	--	4	--
Synodus saurus	--	3	--
Symphurus nigrescens	1	3	--
Mullus surmuletus	1	--	--
Unidentified Myctophydae	2	--	--
Unidentified Labridae	2	--	--
Unidentified Sparidae	1	--	--
Unidentified Pleuronectiformes	1	--	--
Unidentified Teleostei	90	25	144
Anilocra physodes	3	2	22
Scyllarus arctus	--	--	1
Loligo forbesi	--	2	--
Total	296	83	211

compared with the parents (Moyle & Cech, 2000). Most of the time, predated individuals are very young and are thus eliminated as potential competitors (Keenleyside, 1979). Juvenile *S. saurus* occupy the same habitat as adults, thus becoming an easy prey. The capture of crustaceans and cephalopods by individuals of this species or other Synodontidae has been mentioned in some studies (Golani, 1993, Kagiwara & Abilhôa, 2000). Budnichenko (1974) registered the frequent occurrence of *Loligo* spp. in the stomach contents of the confamilial species *Saurida tumbil* and *S. undosquamis*. The presence of an ectoparasite (*A. physodes)* in the stomach contents of *S. saurus* has never been reported before and will be discussed elsewhere (Soares *et al.*, in prep.).

Synodus saurus shows seasonal differences in its diet composition. The relatively low values of the Shannon-Wiener index throughout the sampling months, indicate that this predator's diet is composed of few prey species. Only one species (*S. pilchardus*)

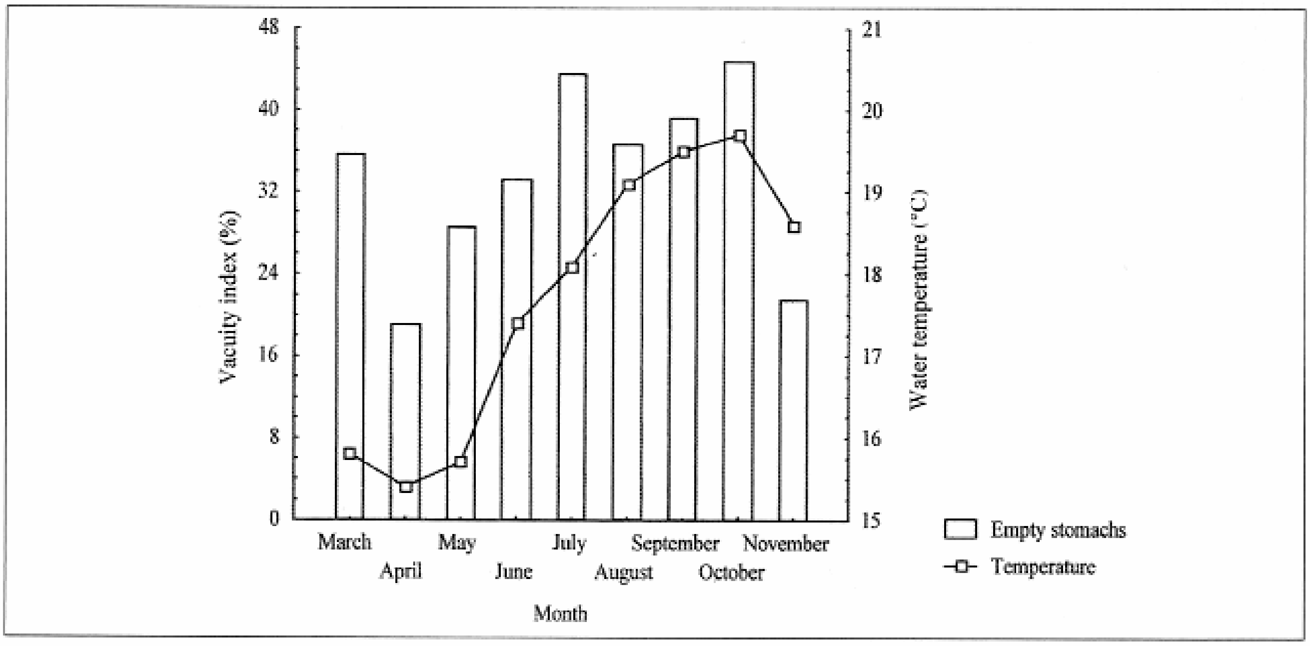

Fig. 4. Vacuity index and sea water temperature, per month.

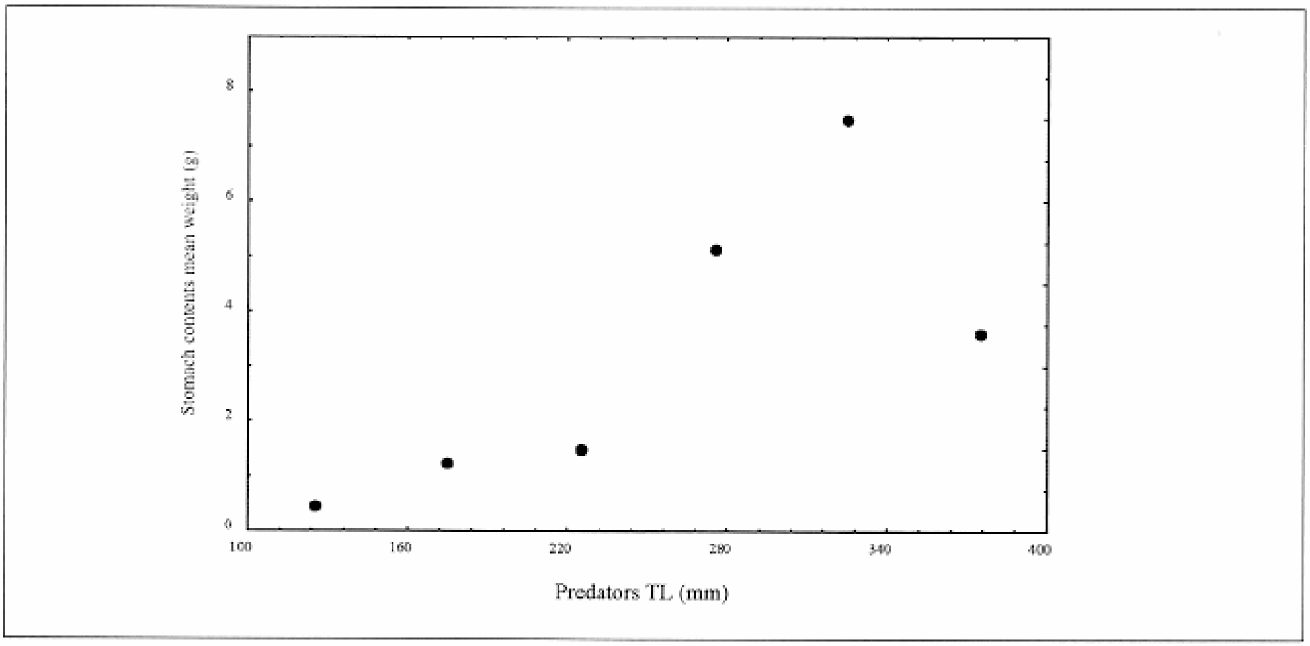

Fig. 5. Stomach contents mean weight (g) per length group.

seems to have a positive association in its monthly diet. The frequency of prey in the stomach also changes monthly. These data reflect environmental dynamics and the abundance and distribution of the target prey species in a seasonal perspective.

The time required to digest the food in the stomach decreases as temperature rises, due to increased enzymatic activity (Jones, 1978). At higher temperatures, similar stomach contents are digested at higher rates (Knutsen & Salvanes, 1999). It is natural, therefore, that the vacuity index is positively correlated to the water temperature. This justifies the fact that only a small fraction of the stomachs examined were completely full and that most of the prey items were already considerably digested.

Although changes to the predator, as it grows, justify possible diet alterations, in the case of *S. saurus* this is not proportional. The width and depth of the open mouth are linearly related to fish sizes and increased body and mouth sizes allow fish to capture a broader range of prey types and sizes (Labropoulou *et al.*, 1998). Also, as metabolic activity decreases with age

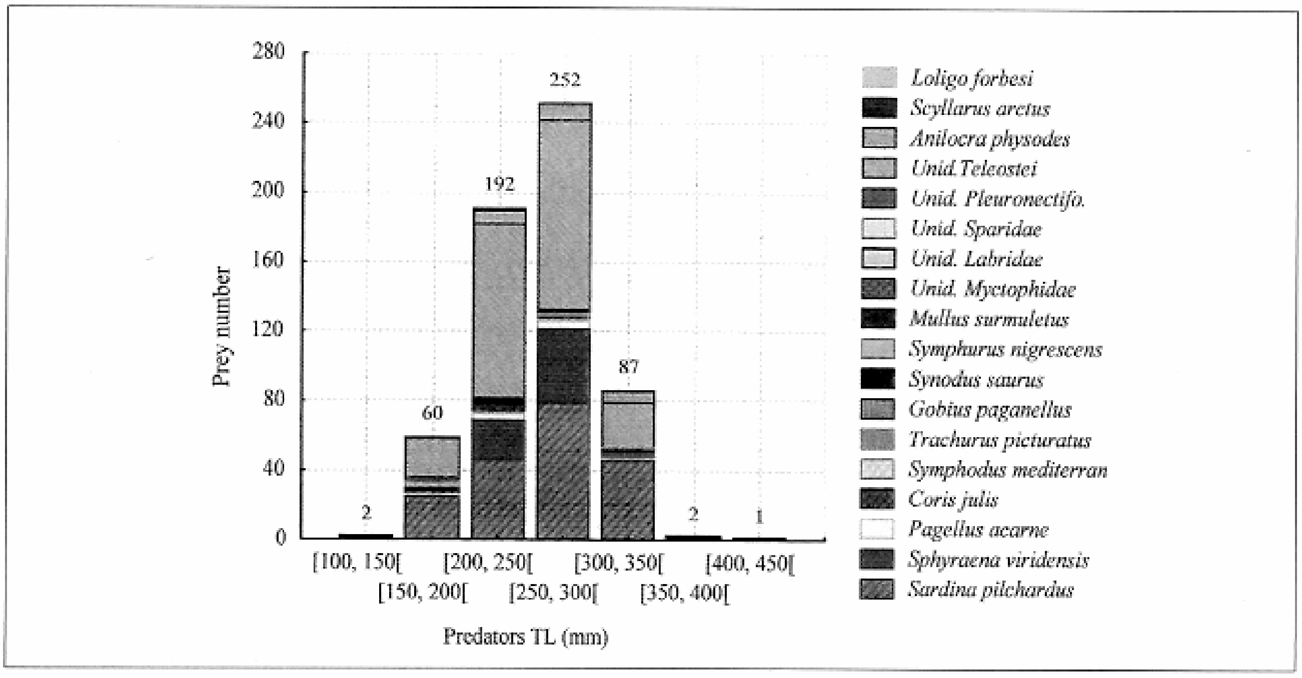

Fig. 6. *Synodus saurus:* distribution of prey frequency per size group.

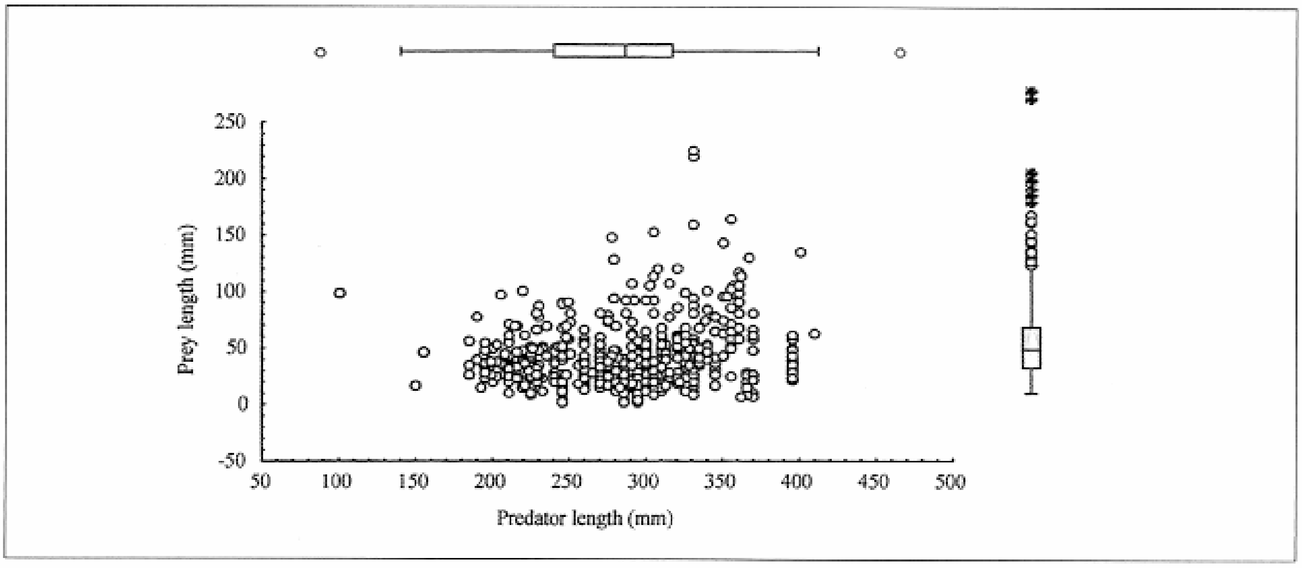

Fig. 7. Relation between lengths of captured prey (mm) and predator length (mm).

or size, it becomes more beneficial for larger fish to obtain more bulk by expending less energy (Labroupoulou *et al.*, 1998). Consequently, a larger predator would have more food in its stomach. This is exactly the case with *S. saurus*. This positive relation enables the predator to capture a greater variety of prey, with several competitive benefits. The relation between the length of predators and the length of its prey may indicate that *S. saurus* exhibits selective predatory behaviour.

In terms of prey specific frequency, we noticed that the predator's middle size groups had higher abundance values. Nevertheless, the stomach contents analyses did not indicate a tendency towards the straight selection of prey, in relation to the predator's length, since all size classes appear to explore similar prey species. There is no distinct segregation in terms of prey items between different length groups.

S. saurus has a mixed feeding strategy, as it combines a population specialization towards *S. pilchardus* with a high between-phenotype component. Most predators utilize several food sources simultaneously (individual specialization). Each species of this set of prey is consumed by a limited fraction of the predators (Amundsen *et al.*, 1996). Milinski (1982) states that, when it comes to predation, predators with a minor success rate may not include preferential prey in their diet. These become generalists.

The hunting behaviour differs with prey species. According to Golani (1993), the prey orientation in the stomach may indicate the hunting strategy of the predator (i.e. prey found head-first were most likely to have been ambushed while those found tail-first were probably chased or caught from behind). Fast swimmers, such as *S. pilchardus* and *S. viridensis* were captured mainly by chasing, while *S. saurus, G. paganellus* and *S. mediterraneus* were ambushed. Prey organisms were found pointing in both directions, suggesting that ambush and chasing may be used for most of the prey found in *S. saurus* stomachs. L'Abée-Lund *et al.* (1996) affirm that the obvious advantage of head-first orientation is that swallowing is easier and quicker and that the advantage increases with increasing prey length because the prey is totally consumed. When swallowing a prey head-first, problems due to defensive mechanisms (e.g., spines, poison glands) are minimized. This is because once the dorsal, anal and pectoral spines are locked into place the prey can only be taken by a predator that can move its mouth around the spines (Moyle & Cech, 2000). The largest prey found in *S. saurus* stomachs was a 225 mm TL *C. julis* that had been eaten head-first, agreeing with L'Abée-Lund *et al.* (1996). The observed data indicate that the orientation of the prey depends partly on its size. In this case, its speed and escape strategy would be determinant. Also, hunting strategy may change with predator size. However, analysis of the stomach contents did not indicate a clear trend in prey type selection according to predator size. Nevertheless, it is clear that an increase in size may favour an increase in predatory ability.

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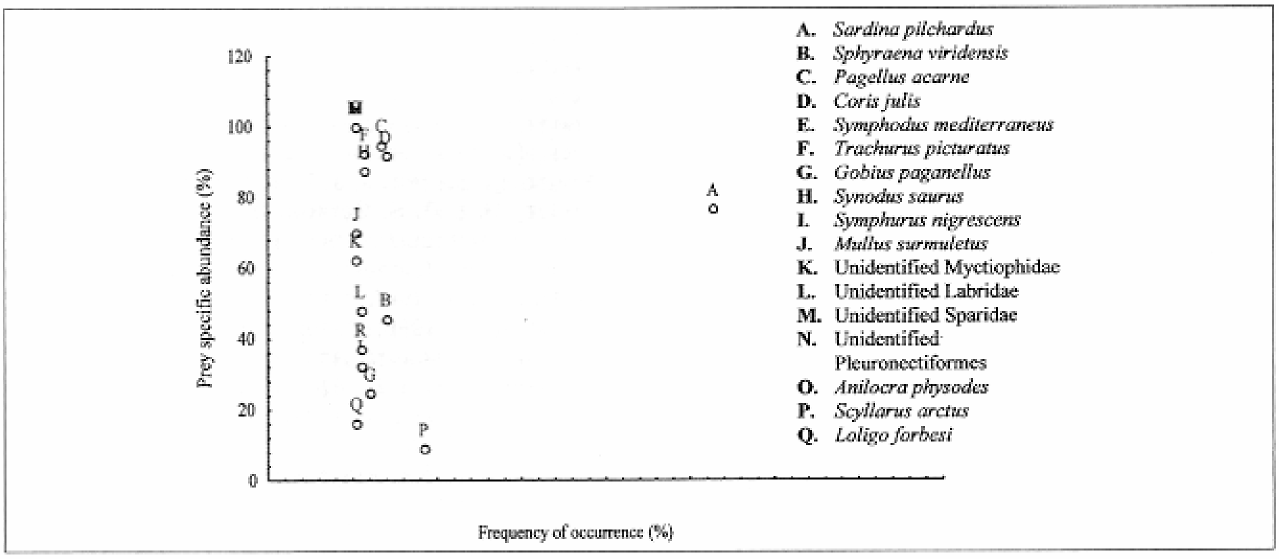

Fig. 8. *Synodus saurus* feeding strategy according to Amundsen *et al.* (1996).

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