possesses none of these features.

It would therefore appear that this frog is sufficiently different from any other known member of the genus to warrant its description as a distinct species, and it is hoped that this paper will prompt further searches elsewhere for specimens.

Etymology

I have pleasure in naming this frog for Professor John Poynton in recognition of the many years of friendly help and guidance he has given me.

Acknowledgements

I thank Professor J.C. Poynton for drawing my attention to this frog, and for comments on a draft of this paper; Dr Brian Stuckenberg, Director of the Natal Museum, for allowing me access to material in his care and for providing research facilities for work on amphibians; and Mr John Geddes Page, Director of the Natal Parks Board, for permission to publish this paper, which forms part of an on-going study of the amphibians of Natal.

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Notes on the biology of juvenile *Sparodon durbanensis* (Pisces : Sparidae) from tidal pools in the Eastern Cape, South Africa

Lynnath E. Beckley

Zoology Department, University of Cape Town, Rondebosch, 7700 Republic of South Africa

Received 5 June 1987; accepted 25 August 1987

The length/frequency distribution, length/mass relationship, seasonal occurrence, growth and diet of *Sparodon durbanensis* from tidal pools in the Eastern Cape was investigated over a two-year period. The fish were predominantly small (mean length of 53 mm TL) with the smallest specimens being found in summer. Juveniles were found to be omnivorous, consuming algae, crustaceans and polychaetes, although, with the acquisition of adult dentition (i.e. crushing molars), hard-shelled molluscs became important in the diet.

Die lengte/frekwensie-verspreiding, lengte/massa-verhouding, seisoenale voorkoms, groei en dieet van *Sparodon durbanensis* in getypoele in die Oos-Kaap is oor twee jaar ondersoek. Die visse was hoofsaaklik klein (gemiddelde lengte 53 mm TL) en die kleinste vissies is die somer gevind. Hul dieet het uit alge, Crustacea en Polychaeta bestaan, alhoewel, met die verkryging van maaltande het hardskulpige Mollusca belangriker geword in die dieet.

The musselcracker *Sparodon durbanensis* (Castelnau, 1861) is an endemic sparid found from the Western Cape to Natal (van der Elst 1981). It is a much sought after inshore angling fish and as little is known of its biology, it has been designated a priority species in terms of South African marine linefish research (Wallace & van der Elst 1983).

Small brightly coloured juvenile *S. durbanensis* occur in tidal pools along the Cape coast (Christensen 1978a; Brownell 1979; Beckley 1985a,b; Smith & Heemstra 1986). Studies on tidal pool fish along the Cape coast have mainly dealt with the biology of resident species such as clinids, gobies and suckerfish (e.g. Christensen 1978b; Veith 1979; Stobbs 1980; Butler 1982; Bennett, Griffiths & Penrith 1983) although Christensen (1978a) has examined trophic relationships between the juveniles of three transient sparids namely, *Diplodus sargus capensis, Diplodus cervinus hottentottus* and *Sarpa salpa.*

For this short communication the small *S. durbanensis* specimens collected in tidal pools near Port Elizabeth by Beckley (1985a,b) have been examined further to provide biological information on a size range of fish poorly represented in a current study on the biology of musselcracker in the Eastern Cape (J. Clarke & C. Buxton pers. comm.). Information is presented on the length/frequency distribution, length/mass relationship, seasonal occurrence, growth and feeding of juvenile musselcracker.

Small musselcracker were collected monthly from March 1980 to May 1982 by rotenone poisoning of lower balanoid zone tidal pools along a 10 km stretch of rocky coast west of Port Elizabeth. Sampling localities were at Chelsea Point, Blue Hole, Willows and Skoenmakerskop (see Beckley 1985a for details of the study area).

Poisoned fish were removed from the tidal pools by hand net, taken fresh to the laboratory and their total length and mass measured to the nearest 1 mm and 0,01 g respectively. Specimens collected at the Blue Hole locality were dissected to remove the digestive tracts, which were individually preserved in 10% formalin, and at a later date examined for contents. The stomach and hindgut from each specimen were opened in water in a petri dish under a dissecting microscope, the contents removed and prey items identified. The frequency of occurrence method (i.e. proportion of digestive tracts containing a particular item) was used to express results.

A total of 233 musselcracker, ranging from 15 mm to 169 mm in total length and 0,05 g to 72,84 g in mass, was collected. The mean length was 53 mm and the mean mass 3,34 g. Figure 1 gives the length frequency distribution of the total catch, of which 95% were < 100 mm in length.

The length/mass relationship for *S. durbanensis* was calculated to be:

$$\text{Mass (g)} = 29{,}45 \times 10^{-6} \times \text{Length (TL mm)}^{2{,}8286}$$
$$(r^2 = 0{,}9913).$$

Length frequency distributions for each month are given in Figure 2 and these show that the smallest fish occurred during summer with no fish < 45 mm recorded from July

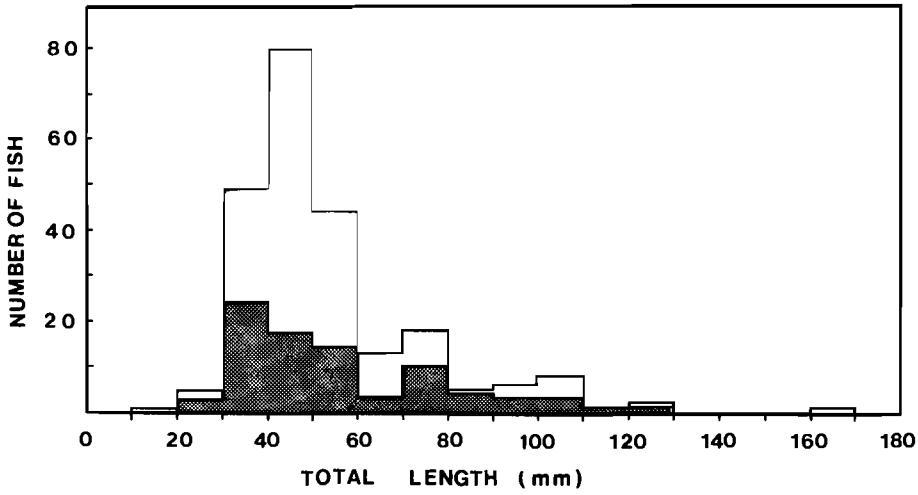

Figure 1 Length/frequency distribution of *S. durbanensis* juveniles collected from tidal pools in the Eastern Cape (n = 233). The shaded section indicates specimens from the Blue Hole locality used in the diet analysis (n = 83).

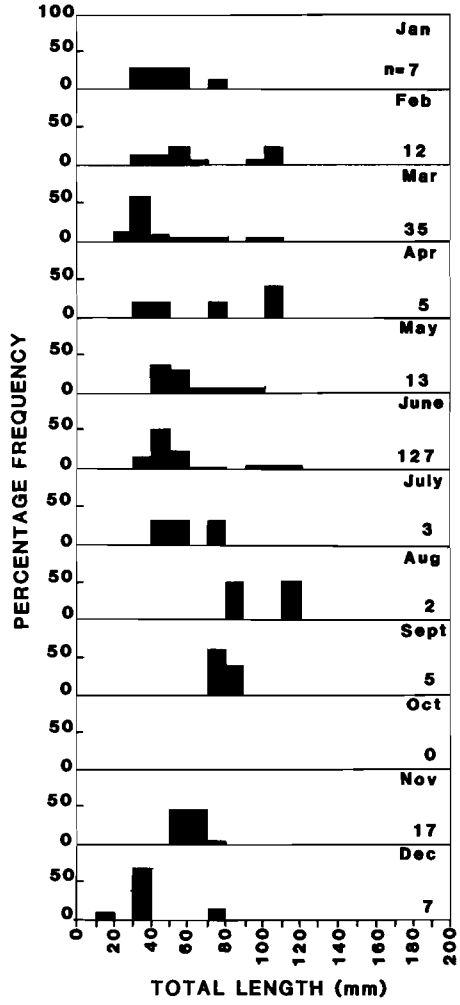

Figure 2 Monthly length/frequency distributions for *S. durbanensis* juveniles collected from tidal pools in the Eastern Cape during the period March 1980 to May 1982.

to November. Growth is difficult to assess due to a lengthy recruitment period and low numbers in some months but it appears that *S. durbanensis* can grow to a length of about 80 mm in their first year.

Table 1 Diet of *S. durbanensis* from tidal pools at Blue Hole in the Eastern Cape (n = 83 and TL range = 26–122 mm)

Prey item	Frequency of occurrence %
Algae	88
Harpacticoid Copepoda	75
Polychaeta	45
Amphipoda	36
Isopoda	27
Gastropoda	12
Ostracoda	11
Hydrozoa	7
Mysidacea	3
Bivalvia	2
Nauplii larvae	2
Insect larvae	1
Decapoda	1

The length frequency distribution of the 83 specimens from Blue Hole used in the diet analysis is indicated by shading in Figure 1. Table 1 lists the prey items recorded and their frequency of occurrence in the diet. Algal fragments were found in the digestive tracts of all size classes of musselcracker examined, harpacticoid copepods occurred in the smaller size classes whilst gastropods were restricted to the larger size classes. Polychaetes, amphipods and isopods occurred most frequently in the diets of specimens from the middle of the size range examined.

The egg and larval stages of *S. durbanensis* are unknown, but Brownell (1979) has described a 13,3 mm SL specimen collected from a tidal pool in False Bay and suggested a breeding season from August through to January. Preliminary results of monthly gonadosomatic index determinations on adults (FL > 400 mm) by

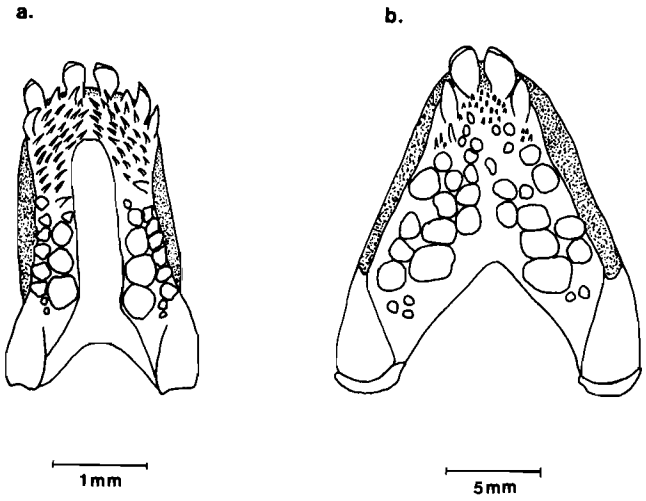

Figure 3 Dorsal view of dentition in the lower jaw of (a) 41 mm TL and (b) 160 mm TL *S. durbanensis* specimens.

Clarke & Buxton (pers. comm.) indicates a prolonged breeding season with a peak in November. The presence of the smallest fish in the Eastern Cape tidal pools during summer and the fact that lengthy larval and post-larval stages are not a feature of the family Sparidae (Brownell 1979) suggests that the *S. durbanenesis* occurring in the tidal pools are predominantly 0+ juveniles.

Christensen (1978a) noted that juvenile *S. durbanensis* fed mainly on harpacticoid copepods and van der Elst (1983) stated that juveniles feed on copepods, amphipods and mysids whilst adults favour mussels. Within the limitations of the frequency of occurrence method of analysis used in the present study (see Hyslop 1980) it is clear that small *S. durbanensis* are omnivorous. With an increase in size, small gastropods became more important in the diet and the largest specimens examined appeared to have acquired the carnivorous habits of the adults. The dentition of the juveniles was found to change progressively with an increase in size (Figure 3) and reflects the change from omnivorous browsing to the crushing of hard-shelled prey. Small juveniles have numerous anterior incisiform and villiform teeth, whereas both the upper and lower jaws of larger specimens are characterized by four incisors and many large molars, a similar dentition pattern to that found in adults (Smith & Heemstra 1986).

Acknowledgements

I thank the South African CSIR (SANCOR) for financial support and Charles Griffiths (University of Cape Town), Colin Buxton, and John Clarke (Port Elizabeth Museum) for commenting on the manuscript.

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