comparative studies on certa in biological aspects of siganus in marine waters of egypt

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.:. Siganids, rabbit fish, marbled spine foot fish locally named ”Batata” area group of marine fish originally belong to Indopacific waters andrepresented in Red Sea by five species out of20 from genus Siganu.l .•:. While Suez Canal was opened to connect Mediterranean Sea with RedSea during 1869, two species of Siganus could immigrate to live ineastern Mediterranean waters viz. Siganus rivulatus and Siganusluridus which are the main topic of the present study .•:. Genus Siganus is comprising nearly 0.56% of the total annual catch ofmarine waters in Egypt. This amount of fish landing could be doubled ifproper measures may be taken toward capture and culture fisheries .•:. In the present study, almost 1134 fish from S. rivulatus and 324 fish ofS. luridus were sampled to conduct various aspects of biologicalinvestigations. The samples were representing the fish catch from thecoastal zone area off Alexandria and marketed in the two main fishmarkets; Alanfoushy for the west side of the city and Abu Qir for theeast side of it..:. Samples collected here ranged between 11-28 em and 17-238 ginlength and weight, respectively, which covered one year time fromMarch 1994 to February 1995 for both studied species: S. rivulatus andS. luridus. The former is de facto more common than the latter..:. s. rivulatus and S. luridus proved to be herbivorous fish thrive bestduring summer season, while in winter feeding coefficient becomes lessas per fullness coefficient and emptiness coefficient..:. Selectivity index showed that plant origin material is more selected fooditem while the feeding intensity or filling index was also high in summerless in winter. Hepatosomatic index has supported the same observationin both species .•:. Gut content analysis conducted by occurrence and points methodshowed that plant origin material was dominant represented by mostlyChlorophyceae. Plant origin material contributed 94% and 91% bycomposition. On the other hand, other food items comprise 6% and 9%only in case of S. rivulatus and S: luridus, respectively .•:. The index of preponderance of food items as a combination ofemployed methods proved exactly that plant origin material occupies99% or 98.3 as the first rank while other food items consist only I% or1.7 for S. rivulatus and S. luridus, respectively .•:. Age and growth of S. rivulatus was studied for age assessment: twographical methods and two indirect employing hard parts. Petersenmethod was supported by Harding-Cassie plot and the length frequencyin both methods revealed the presence of five modes representing ageclass from one to five similarly for S. luridus..:. Vertebrae were employed for age assessment and the relation betweenvertebral radius-fish length

manifested that four age groups wererecorded and the corresponding lengths were also calculated .•:. Eye lens weight was used to evaluate the age and hence the growth ofS. rivulatus is calculated. In this method, the relationship between eyelens weight and fish length pointed out towards the same results inwhich S. rivulatus here were sampled from five age groups and similarresults were obtained for S. luridus .•:. Length-weight relationship was determined and the equation was:log W = -1.866 + 2.872 log L for S. rivulatus. Perusal of the resultsproved also that, condition factor ”K” was increased during summer anddecreased in winter, which is related to food abundance and thespawnmg season. The equation for S. luridus was: 10 W = -1.821 +2.881 log L..:. Growth increment in length and weight was calculated to be 1195.15.81, 18.59 and 21.25 cm for length increment for S. rivulatus. Theage class of one year to four years, on the other hand weight incrementfor the same year classes were 19.49, 23.89, 25.79 and 32.26 g,respectively. The maximum length theoritically is 32 em as VonBertalanffy growth equation represented by Ford Walford. In case of S.luridus, the length recorded at 11.84, 15.75, 18.55 and 21.12 em,respectively for the first till the fifth year of life while the annual weightincrement recorded against these figures were 18.68,23.82,25.59 and30.87 g, respectively. The maximum length is 30 em as per usedequation of Ford-Walford..:. s. rivulatus has sex ratio ill which females commonly outnumberedmales as 1 : 1.30, while for S. luridus sex ratio was less (1: 1.17) and thegonadosomatic index was higher during May-August and the length orweight of gonads tend to increase while fish size increases .•:. Seven maturity stages were described and the size at fish gains itsmaturation was determined at 18-19 em of fish length or at the end of itssecond year oflife .•:. Ova size ranged between 0.4 to 0.7 mm for ripe stage and the femalereleases ou: patch of eggs during the spawning season of 0.7 mm ovasize and the spawning season of S. rivulatus as revealed by maturitystages as gonadosomatic appears to be during summer in between May-August and its peak falls in June and for S. luridus as well .•:. Fecundity of S. rivulatus is ranging between 283.569 to 865.377 whileit is 14.924 to 30.906 as absolute and relative, respectively. Theequation for the absolute fecundity was:log Fa = 1.8087 + 2.8256 log L or log Fr = 1.7707 + 1.8533 log Lfor the fecundity count related to length, while it was:log Fa = 3.7720 + 0.887310g W or log Fr = 3.7681 - 0.1106 log Lfor the fecundity related to weight. Fecundity always increases with thecorresponding increase in fish size .•:. Siganids could boost the production rate of fishes both ways captureand culture fisheries, since the fish has acceptable growth rate and highfecundity as well as it thrive best on sea weeds and plants. The fishnormally inhibit the off-shore waters which can be utilized withreasonable measurements.