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THEME : ECOSYSTEMS AND SUSTAINABLE DEVELOPMENT



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B o o k o f A b s t r a c t s

BDU 20 : Observations on the impact of bottom trawling on benthic biota with special reference to molluscan resources and their utilisation in the Palk Bay and Gulf of Mannar, south-east coast of India

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Observations on the benthic biota by bottom trawlers in the Palk Bay and Gulf of Mannar were made during January 2006 – October 2007. Data was collected from by-catch of trawling at Rameswaram (Palk Bay) and Pamban (Gulf of Mannar) landing centres. The average composition of benthic biota to the total trawl landings was 57.3 per cent and 48.2 per cent at Rameswaram and Pamban respectively whereas the average composition of molluscan biota to the total trawl catches was 17.3 per cent and 16.59 per cent at Rameswaram and Pamban respectively. Though the number of units operated varied greatly of these two centres, the average rate of trawl discards for both the centres during the observation period was more or less the same. The monthly average rate of trash catches ranged from 104.4 to 419.4 kg/unit at Rameswaram while at Pamban it ranged between 40 and 640 kg/unit during the

observation period. Among the different groups of organisms in by-catch, fishes were the dominant followed by crustaceans, molluscs and other benthic biota at both landing centres. Among the molluscan biota, *Hemifusus* sp., *Murex* sp. and *Placuna placenta* were represented in higher magnitude compared with other components at Rameswaram. Whereas, at Pamban *Pinna* sp., *Murex* sp and *Turritella* sp., were dominating. This paper discusses the composition of this by catch and its present utilization.

BDU 21 : Molecular cloning of alpha2-macroglobulin in Chinese shrimp *Fenneropenaeus chinensis*

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Chinese shrimp *Fenneropenaeus chinensis* is a local species that distributes along coastal areas of northern China and of great economic value for its important role in local aquaculture. Due to severe diseases, the farming of this species declined drastically in recent years. Therefore, it is important to explore the mechanisms of internal defense of *F. chinensis*. Alpha2-macroglobulin (a2M) is known as one of the major acute phase proteins in internal defense. It has been reported in many animals from insects to human. In the present study, we reported a putative a2M gene from *F. chinensis*. By searching the EST library of *F. chinensis*, an a2M fragment of 1885 bp was found. PCR walking and 5' / 3'RACE were performed to get the full length. The full-length transcript was 4751bp, including a 5' UTR of 25 bp, a 3' UTR of 219 bp (including a polyA tail of 13bp). The sequence was deposited in GenBank with an accession number EF434410. An ORF of 4506bp encodes a peptide of 1502AA. This peptide possesses typical domain architecture of a2M. Conserved a2M -N domain and an a2M domain were found. A highly variable bait region locates at 691-741 AA residues. The 986-992 AA residues are the thioester motif: GCGEQNM. Alignment showed the a2M of *F. chinensis* (Fc-a2M) is closest to that of *Litopeaneus vannamei* with an identity of 81 per cent. Northern blot showed the Fc-a2M mainly expressed in hemocyte. In order to assess the effect of infection on Fc-a2M expression, WSSV was injected to shrimp. Hemolymph was collected at 0, 3, 5, 8, 14, 23, 37, 59 and 72h after injection. The mRNA levels of Fc-a2M in hemocyte were analyzed using Realtime RT-PCR. Fc-a2M mRNA level increased rapidly shortly after the challenge, and reach it's top at 14h, more than 3 times higher than control. These data suggested that Fc-a2M is closely related to WSSV infection, and may play important roles in the defensive reaction of the host.

BDU 22 : Biotechnological intervention in oil seed crops for biodiesel production

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Energy demand in India is increasing at the rate of 6 per cent annually compared to 2 per cent for many other countries. Currently, imported petroleum crude supplies about 70 per cent of the energy requirement. Vegetable oils, fats and their derivatives have been proposed as an alternate renewable and eco-friendly energy source. As India imports more than 40 per cent of its edible oil requirement, it has to depend on non-edible oils for biodiesel. Various non-edible tree borne oils such as Neem, Mahua, Jatropha and Pongamia, are available in India.

