โครงการหนึ่งอาจารย์หนึ่งผลงาน ประจำปี 2547

ชื่อโครงการ

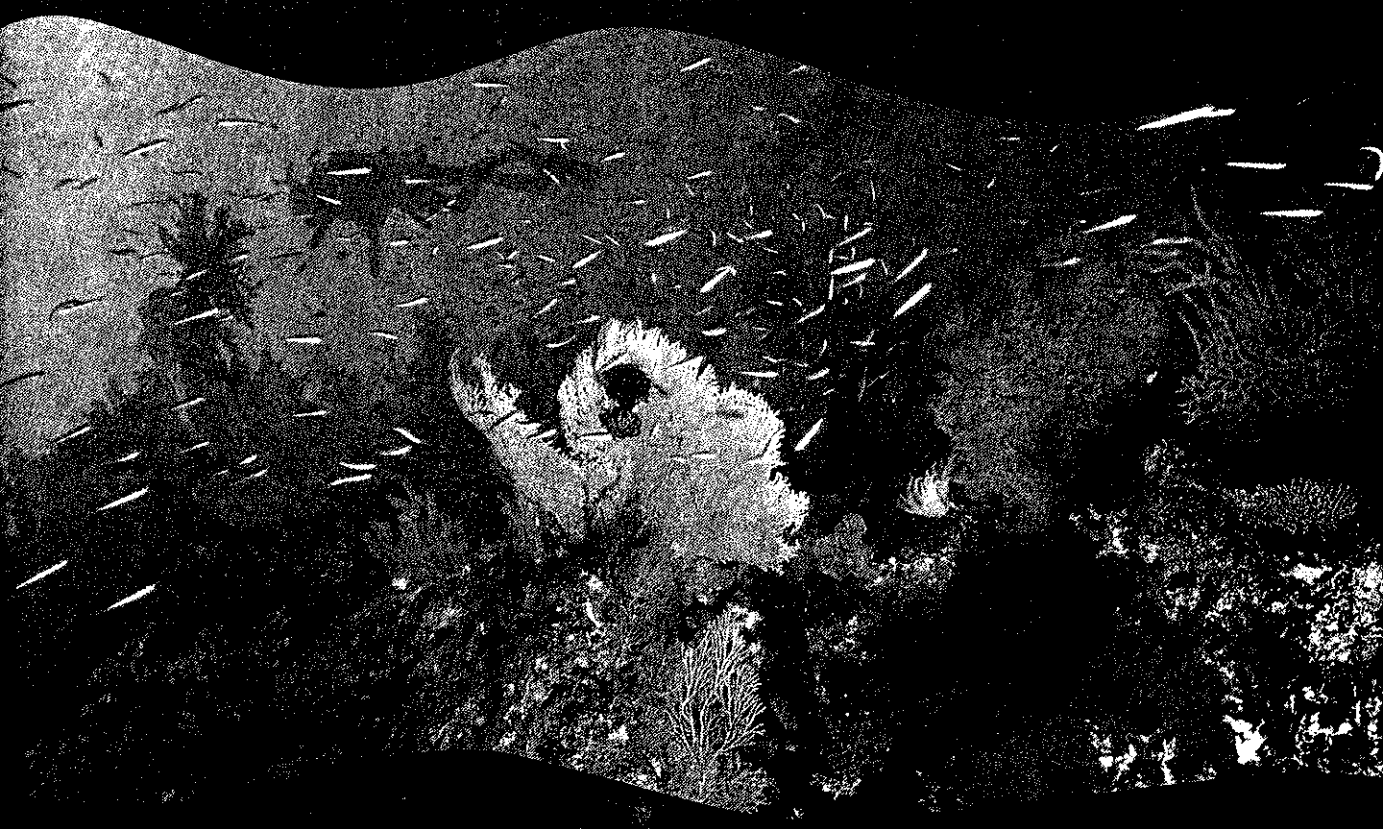
"การตีพิมพ์และเผยแพร่งานวิจัยในการประชุมวิชาการ
ระดับชาติหรือนานาชาติหรือในวารสารวิชาการระดับชาติ
หรือนานาชาติ"

ผู้ช่วยศาสตราจารย์ ดร. พาณี วรรณนิธิกุล
สาขาวิชาชีววิทยา สำนักวิชาวิทยาศาสตร์
มหาวิทยาลัยเทคโนโลยีสุรนารี

Handbook and Abstracts

Third International Symposium on Fish Otolith Research and Application

11-16 July 2004
Jupiter's Hotel and Casino
Townsville, Queensland Australia



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Grant Support

This project is supported by the Innovation Access Programme-International Science and Technology, an initiative of the Government's Innovation Statement, Backing Australia's Ability.

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The Relationship of the Otolithic Spatial Distribution and Morphology of Fish Heads: An Ecological Perspective

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The major sound and vestibular receptors of fish are the otolithic organs of the inner ears. Not only the shape and the size of otoliths are useful for taxonomical identification but also the distribution of otolith of larval fish has been proved to be species-specific. The work presented here tested hypothesis that the spatial distribution of otoliths is correlated to the morphology of the heads of various species of fish. Radiographs are used to photo dorsal and lateral view of fish head to obtain otolith and fish head landmarks in both vertical and horizontal planes. The Thin Plate Spline analysis methods (tpsDIG32, tpsRegr) are used to study the correlations among the four data matrices. The shape of fish head is likely related to their swimming and feeding behaviour. Thus, these two behaviour data matrices are also included for comparison purpose. The preliminary results show a significant correlation between otolith location and morphology of fish head. The significance of this correlation is interpreted in the light of ecological perspectives.

Crystalline Structure on Sulcus Acusticus of Some Thai Fish Sagittae from Different Habitats

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Sagittal otoliths from 3 species of bottom fish {Pristipomiodes typus(Lutjanidae), Nemipterus tambuloides (Nemipteridae) and Pardachirus pavominus (Soleidae)}, 3 species of coral reef fish {Cephalopholis miniatus, Cephalopholisargus (Serranidae) and Lutjanus decussatus (Lutjanidae)} and 2 species of inshore fish {Cephalopholis formosa (Serranidae), Alepes djeddaba (Carangidae)}were collected from coastal of Thailand. Structure of crystals on sulcusacusticus of these sagittae was studies by scanning electron microscope. The differences in shape, size, direction of crystalline arrangement and crystalline surface were found to be related to habitats. The crystals of bottom fish were separated into 2 types: type II was thin, rectangular crystals, stacked in horizontal plane, type II was thick, quadrilateral crystals, arranged invertical plane; surface of these crystals were smooth. In coral reef fish, the crystals were long, rectangular-shaped, large size, smooth surface and arranged in vertical plane. The rod-shaped, irregular surface, small size crystals were found in inshore fish and direction of crystalline arrangement was more complex than those two habitats. The structural differences of the crystals on sulcusacusticus of these sagittae might be related to the pattern of hair cell orientation of sensory epithelium in fish otolith organ which providing information that could be used in sound source localization in each habitat.

Comparative Features of Otolith Microstructure in the Young of Several Fish Species of the White Sea

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The otolith morphology was studied in the young of 16 f species from the White Sea. The features of the sagitta a lapillus microstructure were described. The study show that the sagitta morphology peculiarities were specific f each species, and they apparently reflected the features early ontogeny of the species. Two groups of species we defined based on the ranges of values for sagitta nucle radius. The first group included the species with the valu of the sagitta nucleus radius less than 15 μm, and the seco group included the species with these values higher th 15 μm. It was found that the size of the sagitta nucleus w associated with the features of ontogeny of the species. Int specific differences in the otolith morphology were used identify the young of the White Sea fishes. A key to the pela larvae and juveniles widely distributed in the ichthyoplankt of Velikaja Salma Strait based on the otolith microstructu analysis was developed. The key is complemented by t sagitta microphotos. The relationships between the sagi radius and standard length of the individual were determin for some species.

Cephalopod Statolith Formation, Structure and Function

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Possible mechanisms of the cephalopod statolith formati are discussed in the light of the CORAL theory of calciu deposition. Formation of a fish otolith and a cephalop statolith looks similar from the available evidence. Protei strontium and pH are all important in the dynamics of t deposition process. Proteins and Sr also serve as buildi materials, together with Ca. There is evidence that Sr stabilising formation of Ca crystals, both in the initial pha of deposition and later, during the increment formati Statolith shapes and chemical compositions are speci specific, however, this is associated with their function a ecological requirements of their specific life cycles. Therefo physiological functions of a statolith are not limited to t linear acceleration control, but include control of complicat movements and hovering and act as a developmental archi Can an animal access its own archive? This is an excelle research prospect, but largely unanswered question.