

Session 4. Summary

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Three papers were presented in this session. The first, by Humphreys on pelagic armorhead, reviewed geographic and depth distributions, diurnal migration, food and feeding habits, and spawning, and discussed existing controversy surrounding age and growth, morphological variation, and systematics. The paper also provided a life history to account for the existence of different body types and reproductive conditions.

The second paper by Koami discussed the necessity of obtaining detailed topographic information on submerged banks and seamounts for efficient and long-term utilization of the marine resources associated with them. Detailed topographic information provides clues to finding productive fishing grounds for particular species. To prevent overfishing and eventual collapse of a fishery, Koami advocated establishment of a rotational system much like that used to reforest deforested areas. On a local scale, prefectural governments should cooperate to establish a system whereby species are harvested on a rotational system. The system, according to Koami, can also be applied to fishery resources of the North Pacific, but agreement will have to be reached amongst all nations harvesting the resource.

The third paper was presented by Fujii, who examined species composition of fish fauna over seamounts, seamount chain, ridges, banks, tablemounts, and continental slope. Classifying the fish fauna as "shelf," "oceanic," and "deep-sea," Fujii reported that seamount-associated fish fauna is influenced by characteristics of the surrounding water mass. For example, tropical and temperate water species are not mixed except at watermass boundaries, and a seamount with an overlying layer of low-oxygenated water has a fish fauna low in species diversity as well as biomass.

The ichthyofauna of seamounts is not as limited as believed. Fujii said that seamount shape influences community composition and density. Seamounts with narrow summits have fish communities of low species diversity and density compared to those found over continental slopes. The number of species, however, increases with the area of the summit. Tablemounts, for example, have communities with species diversity about equal to, and density higher, than those found over some continental shelves.

Because endemism is found only among bottom dwellers, Fujii pointed out that many endemic species are known from various seamounts, thus indicating isolation; therefore, seamounts may have important roles in speciation of fishes. He discussed speciation in the Pentacerotidae in some detail.

The discussion during the session brought out that studies on seabird diet and feeding behavior show no seamount-associated species among the prey items. A question was raised on the pelagic armorhead's life history, whether "fat" fish, which eventually mature and change morphologically to "lean" fish, will recover sufficiently to become "fat" once again. Humphreys replied that no concrete evidence of this type of change is available; however, in his opinion, "lean" fish will probably never recover and perish after spawning.

On distribution, it was brought out that pelagic armorhead exhibit an antitropical distribution; therefore, they are not likely to occur in tropical waters. In the Southern Hemisphere, the species of pelagic armorhead that occurs nearest to tropical waters in the Pacific are found near Australia at about lat. 30°S, and in the South Atlantic, the Soviets recorded pelagic armorhead from the southwest coast of Africa near lat. 20°S.