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Porcellanidae (Crustacea: Decapoda) of the Philippines based on the material of the Panglao Marine Biodiversity Project

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Keynote -4

Southeast Asian biodiversity in crisis

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The biodiversity of Southeast Asia is gravely imperiled by drivers including massive habitat modifications, forest fires and the overexploitation of wildlife. I will present on a comprehensive determination of the current state of Southeast Asia's terrestrial biotas and highlight the primary drivers responsible for the grave threat to the region's unique and rich biodiversity. The looming Southeast Asian biodiversity disaster demands tangible actions. However, such will continue to be constrained by socioeconomic variables (e.g. rampant poverty and lack of infrastructure). Any realistic solution should involve a multi-pronged strategy (e.g. political, socioeconomic and scientific) in which all major stakeholders (e.g. people, governments, and national and international non-government organizations) must partake.

Oral -1

Porcellanidae (Crustacea: Decapoda) of the Philippines based on the material of the Panglao Marine Biodiversity Project

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The crab-shaped anomuran family Porcellanidae (Crustacea: Decapoda) includes approximately 30 genera and 280 species mainly distributed in the temperate to tropical waters of the world. Among them, 18 genera and 125 species are presently known from the Indo-West Pacific. The crabs occur at depths above the continental shelf (< 200 m), but are most abundant in the intertidal region on rocky and coral reefs. Many intertidal species (e.g., the genera *Petrolisthes, Pahchycheles*) live in narrow spaces between rocks or dead coral blocks, whereas shallow subtidal species (e.g., *Lissoporcellana, Polyonyx*) are occasionally found in association with sponges and a variety of alcyonacean octcorals (soft corals). The porcellanids are known to be typically suspension feeders and catch food by using the external mouthparts (third maxillipeds) bearing long plumose setae.

The Panglao Marine Biodiversity Project 2004 (PANGLAO 2004), an international research of coastal fauna mainly on crustaceans and mollusks, was conducted around the island of Panglao located southwest off Bohol, the Philippines. During this research project, abundant material was obtained by trawling, dredging, coral brushing, intertidal sampling, sea bottom suctioning, diving, traps and traditional fishing methods such as tangle nets.

Approximately 660 porcellanid specimens were collected from the intertidal region to 150 m depth through the PANGLAO 2004. They contain at least 25 species of nine genena such as *Aliaporcellana*, *Enosteoides*, *Heteropolyonyx*, *Lissoporcellana*, *Neopetrolisthes*, *Pachycheles*, *Petrolisthes*, *Pisidia*, and *Polyonyx*. *Enesteoides* and *Polyonyx* include some undescribed species, and the latter genus comprises seven species at least and is highest in species number. Individuals of *Petrolisthes militaris* and *P. scabriculus* are abundant in this material. The two species have been frequently recorded from depths of more than 20 m unlike most of other congeners are intertidal dwellers. Although 19 species and ten genera were previously known from the Philippines, the PANGLAO material lacks six species and three genera (*Capilliporcellana*, *Novorostrum*, and *Porcellanella*).

In Indonesian waters adjacent to the Philippines, 11 genera and 33 species have been hitherto reported. From the Ryukyu Islands in the southwestern Japan, nine genera and approximately 40 species have been found and most of them are collected from the intertidal region to 2 m depth. The porcellanid fauna of New Caledonia and the Loyalty Islands, southwestern Pacific, was also recently documented, and it

comprises 11 genera and 36 species including three new species. A new species, *Polyonyx spina*, was described on the basis of the material of the Loyalty Islands and the PANGLAO 2004. The species recorded from the Philippines are generally found in those from Indonesia and the southwestern and northwestern Pacific islands. However, the numbers of *Petrolisthes* species are much fewer in the Philippine material than those of other three areas. This is probably due to limited sampling efforts in the intertidal region through the PANGLAO 2004. Further research may eventually reveal existences of more intertidal species as well as shallow subtidal species hiding in crevices of coral reefs.

The porcellanids occurring in the tropical and subtropical waters are generally known to have wide distributions in the western Pacific or Indo-West Pacific, although their occurrence records are frequently scattered and taxonomy of some species seems to remain unclear. Mud and fine sand substrata in the estuaries and mangroves are generally regarded as unusual habitat for porcellanids. However, some species of *Petrolisthes* can be obtained from hard objects on such soft substrata, and some *Polyonyx* and *Raphidopus* species are also known to be associated with tube-dwelling polychaetes as infaunal burrows. Further special effort to obtain estuarine species will have to be made for understanding of the true fauna of porcellanids in Southeast Asia since many estuaries, mangrove swamps, and similar environments exist there.

Oral -2

Tangle net fishing in the Panglao and Balicasag Islands, a Filipino innovation

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Tangle nets have been in use by the fishermen of Panglao and Balicasag Islands in the central Philippines for decades. This indigenous fishing method is primarily designed for catching benthic marine life, particularly mollusks and crustaceans, for food and the collectors' trade. The nets are made of light synthetic netting material, with a mesh size of about 1 inch square, and suspended on 5-mm thick nylon ropes on both edges. The dimensions of a single, rectangular net are usually 1-1.5 m in width and between 100-200 m in length. Small lead weights are attached on the lower edge of the net. The effective depths at which these nets are used range from 30-200 m. To deploy the net, one end is weighed down by rocks, which serve as a makeshift anchor, tied to the nylon rope. The rest of the net is lowered using a spool-like mechanism as the fisherman's boat moves along a line projected by the fisherman. The other end (usually found in shallower depths) is tied to a large buoy, which marks the position of the net and aids in the location and retrieval of the net. The net then settles on the seabed and is left there overnight or for about 24-48 hours. As crustaceans and mollusks crawl over it they get entangled and caught in the meshwork. The fisherman then retrieves the net by diving into the water to get the end attached to the buoy, and fitting this end into the spool. The fisherman then commences to pull the net up by means of the spool, sometimes doing some skillful maneuvering to untangle the net if it gets snagged in the irregular underwater terrain. Any specimens caught in the net are then carefully disentangled, such that most of the time they are in better condition than specimens brought up by trawl or dredge. In recent years, tangle net fishing has yielded astounding and rare biological finds, including several new taxa. Tangle net fishing has also been shown to efficiently collect specimens from areas that cannot be sampled using traditional methods such as trawls and dredges.