

onomic composition of the modern communities is highly variable and specific diversity is very low. The specific diversity appears to be low in modern seep communities because of the extraordinarily high densities of *Calyplogena*. There is no specific predator. Opportunistic suspension feeders such as the bivalves and worms concentrate in the vicinity of the seeping waters (Ohta and Laubier, 1987) where there is a significantly greater food supply than is typical for

deep-sea depths (Suess et al., 1985). The very small limpets, trochids, and turbinid gastropods in some of the Washington limestones were probably grazers of bacteria that lived on the surfaces of bivalves and worm tubes. Similar gastropods have been observed in modern cold-water seep communities off Florida (Paull et al., 1984).

It is important to mention that the modern Oregon chemosynthetic communities are asso-

ciated with methane-derived authigenic carbonate deposition (Kulm et al., 1986). This mode of formation of calcium carbonate was most likely responsible for the presence of bodies of limestone around the three late Eocene Washington communities.

Reports of ancient examples of subduction-related communities are rare and so far have been confined to Miocene and Pliocene deposits in Japan (Kanno et al., 1989; Niitsuma et al.,

Figure 2. Photos a-l: Humptulips deposit; a—*Thyasira (Conchocele) folgeri* Wagner and Schilling, hypotype, LACMIP 8339, right valve of articulated specimen; b, c—patelliiform limpet, hypotype, LACMIP 8340, dorsal and lateral view; d, e—fissurellid? limpet, hypotype, LACMIP 8341, dorsal and lateral view; f—*Homalopoma?* sp. A, hypotype, LACMIP 8342, abapertural view; g—naticid, hypotype, LACMIP 8343, abapertural view; h—*Dentalium* sp., hypotype, LACMIP 8344, lateral view; i—serpulid worm tube, hypotype, LACMIP 8345, lateral view; j—serpulid worm tubes (colonial specimens), hypotype, LACMIP 8346, lateral view; k, l—vestimentiferan? worm tubes, hypotypes, LACMIP 8347-8348, lateral views. Photos m-u: Bear River deposit; m, n—*Modiolus (Modiolus)* n. sp., hypotype, LACMIP 8349, cluster of specimens and hypotype, LACMIP 8350, right valve of articulated specimen; o, p—*Calyplogena* n. sp., hypotype, LACMIP 8351, left valve of articulated specimen and hypotype, LACMIP 8352, dorsal view of internal mold of articulated specimen; q—*Margarites (Pupillaria)* n. sp., hypotype, LACMIP 8353, apertural view; r—*Homalopoma?* sp. B, hypotype, LACMIP 8354, abapertural view; s—*Acharax* cf. *A. dalli* (Clark), hypotype, LACMIP 8355, right valve of internal mold of articulated specimen; t—pitarid, hypotype, LACMIP 8356, right valve of articulated specimen; u—*Aphrocallistes polytretos* Rigby and Jenkins, hypotype, LACMIP 8357, lateral view.

