Skeletal eroding band in Hawaiian corals

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Fig. 1 *Montipora capitata* with SEB infection; **a** macroscopic view, **b** microscopic view 86 × 88 mm (300 × 300 DPI)

Skeletal eroding band (SEB) (Antonius 1999) is a ciliate infection associated with tissue loss in corals (Antonius and Lipscomb 2000). Here, we report the presence of this infection in Hawaii for the first time. This extends the known distribution of SEB (Antonius and Lipscomb 2000; Page and Willis 2008) and supports speculation that SEB affects corals globally (Harvell et al. 2007). SEB was identified macroscopically from a progressing black line or band surrounding healthy coral tissue (Fig. 1a; Antonius and Lipscomb 2000). Progression was indicated by algal colonization of the exposed skeleton, which appeared speckled black due to clusters of ciliate loricae (Fig. 1a), a feature that distinguishes SEB from black band disease (Antonius and Lipscomb 2000). Microscopically, the ciliates were morphologically similar to *Halofolliculina corallasia*, a SEB ciliate previously described in the Indo-Pacific (Antonius and Lipscomb 2000). Ciliates had black, flask-shaped loricae, embedded perpendicular to and within the coral skeleton; two paler pericystostomial wings extended from each lorica (Fig. 1b; Antonius and Lipscomb 2000). The dark and spherical macronucleus was also discernable (Fig. 1b; Antonius and Lipscomb 2000). SEB was found exclusively on *Montipora capitata* and *Pocillopora* spp., consistent with previous reports of susceptibility in the coral families Acroporidae and Pocilloporidae (Page and Willis 2008). SEB prevalence was assessed using standard coral disease surveys (Harvell et al. 2007) in July 2007 and between 1.5 and 2.5 m from the reef crest on the reef slope at nine sites ($N = 3$ transects per site) within Kāneʻohe Bay. The sites increased in distance from Kāneʻohe stream mouth (0.48–4.57 km) in the southern portion of the bay, an area documented to have degraded water quality (Hunter and Evans 1995). Total SEB prevalence, including all scleractinian species, ranged from 0 to 1.1%. SEB prevalence was highest (0.92–1.1%) within 3 km of the stream mouth, at sites where mean total coral cover was 42–58% (from a range of 13.8–96.8%), and the relative contribution of *Montipora capitata* and *Pocillopora* spp. to the total coral cover was between 73 and 79%.

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References

- Antonius A (1999) *Halofolliculina corallasia*, a new coral-killing ciliate on Indo-Pacific reefs. *Coral Reefs* 18:300
- Antonius A, Lipscomb D (2000) First protozoan coral-killer identified in the Indo-Pacific. *Atoll Res Bull* 481:1–21
- Harvell CD, Jordan E, Merkel S, Raymundo L, Rosenberg E, Smith G, Weil E, Willis BL (2007) Coral disease: environmental change and the balance between coral and microbes. *Oceanography* 20:58–81
- Hunter CL, Evans CW (1995) Coral-reefs in Kaneohe Bay, Hawaii—2 centuries of western influence and 2 decades of data. *Bull Mar Sci* 57:501–515

Page CA, Willis BL (2008) Epidemiology of skeletal eroding band on the Great Barrier Reef and the role of injury in the initiation of this widespread coral disease. *Coral Reefs* 27:257–272

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Reef sites

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