

**COMPOSITION OF THE FIXED SEA URCHIN COLONY ON
HATAKEZIMA ISLAND, 1972-1974**

The examinations were made on July 10, 1972 (the water was lowest, 2 cm, at 11:28; it was cloudy; the sea was calm), on July 2, 1973 (the water lowest, -5 cm, at 13:08; fine; breeze from west; the sea calm) and on June 20, 1974 (the water lowest, -1 cm, at 11:55; fine; wind from SSW, but waves insignificant), respectively.

Table 1. Population composition in the fixed echinid colony in 1972-1974.

1972, July 10	Section 1 (SW)	Section 2 (NW)	Section 3 (SE)	Section 4 (NE)	Total	Percent
<i>Anthocidaris crassispina</i>	60	89	54	69	272	33.1
<i>Echinostrephus aciculatus</i>	60	217	87	100	464	56.5
<i>Echinometra mathaei</i>	6	23	24	31	84	10.3
<i>Mespilia globulus</i>				1	1	0.1
					821	100.0

1973, July 2	Section 1 (SW)	Section 2 (NW)	Section 3 (SE)	Section 4 (NE)	Total	Percent
<i>Anthocidaris crassispina</i>	46	67	58	67	238	29.9
<i>Echinostrephus aciculatus</i>	56	215	98	102	471	59.3
<i>Echinometra mathaei</i>	8	22	26	28	84	10.6
<i>Mespilia globulus</i>		1			1	0.1
<i>Hemicentrotus pulcherrimus</i>		1			1	0.1
					795	100.0

1974, June 20	Section 1 (SW)	Section 2 (NW)	Section 3 (SE)	Section 4 (NE)	Total	Percent
<i>Anthocidaris crassispina</i>	49	65	67	62	243	30.1
<i>Echinostrephus aciculatus</i>	61	207	94	110	472	58.4
<i>Echinometra mathaei</i>	6	25	25	37	93	11.5
					808	100.0

The ratio of *Echinostrephus* to *Anthocidaris* (E/A) in the three years is given in Table 2. The ratio has been much raised in these years and this is seemingly brought about evidently by a considerable increase of *Echinostrephus*. The density of *Echinometra* in the area has steadily

increased for the last decade. The definite decrease of *Mespilia* in these years is to be noted, as this might reflect the sea-water pollution around Hatakezima Island.

Table 2. The ratio of *Echinostrephus* to *Anthocidaris* (E/A) in 1972—1974.

	1972	1973	1974
E/A	1.706	1.983	1.950

A noteworthy event of the sea urchin fauna in the three years must be the outbreak of *Temnopleurus* (*Toreumatica*) *reevesi* (Gray) in the shallow waters near the laboratory. This sea urchin is distributed widely in the coastal waters of Japan deeper than 5 m, but never abundantly. In Tanabe Bay, a small number of this sea urchin has actually been found in catches of commercial trawling. However, it had never been found in shallows less than 5m near the laboratory before the spring season of 1973.

On May 30 and June 3, 1973, tremendous numbers of this sea urchin were stranded on the northern beach of the laboratory ground and similar stranding in a slightly smaller scale on July 14. Small numbers of juvenile urchins of *Pseudocentrotus depressus* (A. Agassiz) and *Hemicentrotus pulcherrimus* (A. Agassiz) were found mingled with *Temnopleurus*. Observations by diving revealed that *Temnopleurus* was distributed densely within 200 m from the shore in 1—7 m deep shallows below the northern beach, the density attaining 70 urchins/10m² or more in the ranges 120—140 m and 190—200 m from the shore. A significant number, though not so many but unusual in this area, of *Echinocardium cordatum* (Pennant) were found in swarms of *Temnopleurus*. Similarly dense swarms of this sea urchin were confirmed in a limited area at the tip of the cape, the neck part of which is occupied by the laboratory and the area is far separated from the northern beach of the laboratory by rocky areas. No swarms were observed in any other parts of the vicinity. And an observation on October 6 showed that all those swarms had completely disappeared already. Probably the appearance of abundant *Temnopleurus* in shallows near the laboratory was brought about by spawning migration of this sea urchin in the summer season; actually some spents were included in stranded urchins. Further, this outbreak in the above-mentioned areas might be caused by unusually successful falling of unusually dense imagoes of this sea urchin, being accompanied with those of *Echinocardium*. Lastly, it is somewhat allusive that *Lovenia elongata* (Gray) was observed unusually frequently by members of the laboratory aquarium in sandy shallows below the southern beach of Hatakezima Island in summer of 1972.

The regular observation in 1972 on Hatakezima Island was made in collaboration with Mr. Hiroshi Kawahara, while the observations on *Temnopleurus* were done in cooperation with Mr. Hidetomo Tanase. For the details of the latter, refer to an article in Nanki Seibutu, 15 (2), 1973, pp. 37—40 (in Japanese).

YASUNOBU YANAGISAWA