



FIGEMA

Mar Biol (2011) 158:1311–1318
DOI 10.1007/s00227-011-1650-6

ORIGINAL PAPER

Improving escape responses of hatchery-reared scallops *Argopecten purpuratus*

Katherina B. Brokordt · Gabriela A. Núñez ·
Carlos F. Gaymer

Received: 1 December 2010 / Accepted: 16 February 2011 / Published online: 19 March 2011
© Springer-Verlag 2011

Abstract Hatchery rearing of the scallop *Argopecten purpuratus* has resulted in successive generations of scallops not exposed to predators that are less sensitive to and escape more slowly from predators than wild scallops. The present study examined whether conditioning hatchery-reared *A. purpuratus* to its natural predator, the sea star *Meyenaster gelatinosus*, improved its escape responses. Both juvenile and adult *A. purpuratus* from Tongoy Bay, Chile, were exposed for 7 days to different conditions: (1) continuous predator odor, (2) predator contact for 30 min three times a day, (3) a combination of the two previous conditions, and (4) no exposure to the predator (control). After conditioning, we evaluated scallop's escape responses: reaction time, total clap number, duration of the clapping response, clapping rate, and the time scallops spent closed when exhausted. Conditioning with contact and odor plus contact (i.e., high predation risk) resulted in 25 and 50% shorter reaction times of juveniles and adults, respectively. Further, these stimuli caused juveniles to increase the number of claps and clapping rate. For adults, the time spent closed after exhaustion decreased by 50 and 63% after conditioning with contact and odor plus contact, respectively. Therefore, it is shown for the first time that exposure of scallops to increasing predator stimuli

enhances escape responses, evidence of threat-sensitive predator avoidance.

Communicated by J. P. Grassle.

K. B. Brokordt · C. F. Gaymer
Centro de Estudios Avanzados en Zonas Áridas,
Universidad Católica del Norte, Coquimbo, Chile

G. A. Núñez · C. F. Gaymer (✉)
Departamento de Biología Marina,
Universidad Católica del Norte, Coquimbo, Chile
e-mail: cgaymer@ucn.cl