**Figure 1** Location of grab samples in the Caspian Sea.   In the Gorgan transect, the station numbers are in italics and the water depths (m) in bold.

**Figures 2–31**  Light micrographs of Caspian Sea dinoflagellates grown in culture from sediments.

(2–6) *Gonyaulax baltica*, culture CS-ST1-005. (2) Lateral view of cell showing cingulum offset. (3) Dorsal view of cell showing general shape and wide cingulum. (4) Antapical view of cell showing broad sulcus. (5) Ecdysed cell showing antapical spines (arrow). (6) Hypotheca of cell showing plate reticulation, smooth sulcus and intra plate growth bands. (7–10) *Gonyaulax* sp., culture CS-ST2-001. (7) Lateral view of cell showing general shape, cingulum offset, apical horn and antapical spine. (8) Ventral view of cell showing broad offset cingulum. (9) Dorsal view of cell in outline showing pronounced apical horn and definite shoulders. (10) Ecdysed theca showing solid antapical spine and heavy plate reticulation. (11–14) *Gymnodinium aureolum*. (11-13) Culture CS-ST7-009. (14) Culture A3. (11) Cell showing overall shape, central nucleus and radiating chloroplasts. (12) Ventral view of cell showing sulcal-cingulum arrangement. (13) Dorsal view of cell. (14) Cells in duplet. (15–20) *Kryptoperidinium foliaceum*. (15 and 19) Culture CS-ST1-007. (16 and 18) Culture CS-ST1-001. (17 and 20) Culture A6. (15) Ventral view of cell showing leaf-like curvature, central nucleus, median cingulum and eyespot. (16) Lateral view of cell showing dorso-ventral flattening and eyespot. (17) Theca stained with trypan blue. (18) Cysts in ventral view. (19) Cyst in lateral view. (20) Cysts in mucoid capsule. (21–25) *Lingulodinium polyedra*. (21 and 23) Culture CS-ST1-002. (22) Culture CS-ST1-004. (25) Culture CS-ST1-003. (21) Ventral view of cell showing cingulum offset and first apical plate. (22) Dorsal view of cell showing horse-shoe shaped nucleus. (23) Ecdysed hypotheca showing distinctive polyhedral shape and plate reticulation. (24) Squashed cell showing thecal plates. (25) Cyst from Station 1 sediment. (26–28) *Scrippsiella acuminata*. (26) Culture CS-ST2-006. (27–28) Culture D10. (26) Outline view of cell. (27) Outline view of cell. (28) Cyst formed in culture. (29–30) *Woloszynskia* sp. (29) Culture D3 showing cell with eyespot. (30) Cell showing general outline from culture D4. (31) *Impagidinium caspienense* from palynological preparation (core CS03/1 at 32 cm) showing archeopyle (arrow). Scale bars = 10 µm.

**Figure 32** Molecular phylogeny of dinoflagellates isolated from Caspian and Black sea sediments inferred from partial large subunit rDNA (LSU rDNA) sequences based on the maximum likelihood (ML) method. *Oxyrrhis marina* was used as an outgroup. Numbers on branches represent ML bootstrap values for that node; bootstrap values >50% are shown. Sequences from isolates in this study are indicated in bold. The tree is drawn to scale, with branch lengths measured in the number of substitutions per site. Scale bar = nucleotide substitutions per site.The analysis involved 42 nucleotide sequences. Sequences generated in this study are available from GenBank, Accessions KY921615-KY921624. There were a total of 503 positions in the final dataset.