Solutions

Marking: **M1** a correct method, **A1** the correct answer, **B1** an independent mark.

Each answer shows the steps, then the **result**.

2.1

it is shared and owned by no one, so access is open to all; each fisher gains by catching more, while the loss of stock is shared, so overfishing results

2.2

(i) about half the carrying capacity, $K/2$; (ii) catch above MSY is larger than the yearly growth, so the stock falls; a smaller stock produces fewer young, so the growth and the possible catch fall further

2.3

mangroves are cleared, removing nursery habitat and coastal protection; waste, food and chemicals flow out and cause eutrophication; disease and antibiotics spread to wild populations / feed uses wild-caught fish

3.1

(a) catches rose to a peak in the late 1960s, fell, then collapsed to almost zero by the early 1990s

(b) the remaining population was very small, with few large breeding adults; the ecosystem changed: other species and predators took cod's place, and bycatch and cold water also slowed recovery

3.2

(a) any two, each explained: quotas keep the catch below the yearly growth; a larger mesh size lets young fish escape and breed; a closed season or area protects spawning fish

(b) loss of income or jobs / weak enforcement at sea / other countries keep fishing

3.3

award up to [4]: for: farming adds supply without catching wild stocks; herbivorous species such as carp or tilapia need little fish feed; against: carnivorous farmed fish (salmon) are fed fishmeal from wild fish; pollution, disease and escapes harm wild populations, and coastal habitats may be lost; conclusion: true for some species and well-run farms, not for all

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