

(Levels of organisation (food chains, food webs, predator–prey cycles))

Q1.a)(2019)

primary consumer

Q1.b)(2019)

correct shape: 4 tiers with
largest at bottom and smallest
at top

correctly labelled:

dragonfly / nymph

+ hydra

+ daphnia

+ algae

Q1.c)(2019)

any **one** from:

(Daphnia biomass smaller
because)

- non-digestible parts (of algae) or lost in faeces
- not all absorbed
- lost in urine / urea
- used in respiration **or** lost as carbon dioxide / CO₂
- algae not all eaten **or** eaten by other organisms
- some algae decompose

Q1.d)(2019)

14

14 000

Q1.e)(2019)

(volume of pond =)

1.875

or $2.5 \times 1.5 \times 0.5$

$14\,000 \times 1.875$

26250

2.625×10^4

Q1.f)(2019)

increased (growth /
reproduction of) algae

(more algae so) more food for
Daphnia

Q1.g)(2019)

(Hydra have) less food

because (graph shows) fewer
Daphnia (with more fertiliser)

Q2.a)(2021)

2.3 **and** 0.1 (million)

$$\frac{2.3 - 0.1}{2.3} \times 100 \text{ **or** } \frac{220}{2.3}$$

95.65217.....

96

Q2.b)(2021)

figures may be given without units (million tonnes) throughout

points for:

- small fish are not caught so can live long enough to reproduce
- biomass / stocks have generally increased after these laws introduced
- '77-'81 law (total ban) resulted in increase in biomass, eg 0.1 to 0.48 **or** to 0.9 by '84
- '84 law (mesh size) resulted in increase in biomass, eg 0.9 to 1.8 (by '90)
- '97 law (quotas) resulted in increase, eg 1.15 to 1.25
- '98 law (ban in breeding season) resulted in increase, eg 1.25 to 2.5

points against:

- could be a cause other than the law **or** correlation does not necessarily indicate causal relationship **or** other factors
- laws superimposed so can't necessarily tell the effect of each
- each law results in an increase followed by a decrease
- quotas lead to dead fish being thrown back into sea

For **Level 3** points both for and against must be considered together with appropriate use of data

Q3.(2023)

a community

Q4.a)(2023)

constant (from Jan) to Mar /
(mid-)Apr

increases (from mid-)Apr to /
and May

decreases from May / Jun to
Dec

Q4.b)(2023)

B

Q4.c)(2023)

D (because) present only May to
Sep