READING PASSAGE 2

*You should spend about 20 minutes on **Questions 14–26**, which are based on Reading Passage 2 below.*

Jellyfish – The Dominant Species

A Jellyfish have become the curse of beach holidays, permeating every ocean on the globe, thriving in the Arctic and the tropics. In an ever-changing world where other species struggle to endure, jellyfish populations are on the rise.

To the untrained eye, these creatures drift aimlessly on the oceans' currents and appear benign. In addition, they lack sharp claws, piercing teeth or even a brain. Despite this, they are armed with an amazing arsenal of weapons, especially the stinging power of their tentacles. As a result, jellyfish are among the most-feared, least-understood creatures in the seas.

B According to Dr Monty Graham, a jellyfish scientist at the University of South Alabama, US, 'Jellyfish are a pretty good group of animals to track coastal ecosystems. When you start to see jellyfish numbers grow, that usually indicates a stressed system.' While populations appear to be down this year, Dr Graham sees 'a statistically solid increase' over the longer term.

This increase first gained attention in the 1980s when a huge number of jellyfish, Atlantic Ocean natives named Mnemiopsis leidyi, devastated the Black Sea, an ecosystem already weakened by overfishing of anchovies. Scientists believe that this species of jellyfish came in on the bottom of a ship and then rapidly multiplied, feeding on anchovy eggs and the plankton that young fish rely on.

C Dense jellyfish aggregations can be a natural feature of healthy ocean ecosystems, but a clear picture is now emerging of more severe and frequent jellyfish outbreaks worldwide. Dr Anthony Richardson, from the University of Queensland, Australia, explains that once jellyfish gain a foothold, if conditions are right, they can establish a massive population at the expense of other ocean life. The problem is that parts of the ocean might switch from being dominated by fish to being dominated by jellyfish.

D A study done by Richardson and his colleagues explores the causes behind jellyfish infestation, and the need for swift, decisive action to stem the jellyfish takeover. Jellyfish outbreaks are linked directly to human actions, including overfishing, the input of fertilizer and sewage into the ocean, and climate change.

Overfishing has removed fish from marine ecosystems at astounding rates. According to Richardson, this has made it possible for jellyfish to take their place. ‘This is because small fish appear to keep jellyfish in check by predation (on jellyfish when they are very small) and competition (when feeding). So, once we remove fish, jellyfish can proliferate.’

Eutrophication is another human-caused change in the ocean that has likely contributed to jellyfish explosions. Eutrophication is an increase in nitrogen and phosphorus in the ocean, largely caused by fertilizer and waste run-off. This leads to algae blooms, which lower oxygen in the marine ecosystem, creating so-called ‘dead zones’, which have been increasing dramatically around the world. According to Richardson, these low-oxygen waters give jellyfish the advantage. ‘Fish avoid low-oxygen waters but jellyfish, having lower oxygen demands, not only survive but can thrive in these conditions as there is less predation and competition from fish.’

E Furthermore, Richardson and his colleagues speculate that climate change may expand the traditional geographical range of jellyfish. ‘As water warms, tropical species are moving towards the poles. Many venomous jellyfish species are tropical and could move into more densely populated subtropical and temperate regions.’

F Once jellyfish appear en masse in an ecosystem, they can make it very difficult for fish to stage a comeback. By feeding on fish, the jellyfish successfully prevent fish from returning to their normal population numbers, says Richardson. ‘One can thus think of two alternate states with each being stable: one dominated by fish and the other by jellyfish. Unfortunately, where there is a jellyfish-dominated state then this does not support the nutritional needs of other fish, marine mammals, and seabirds.’ In other words, an ecosystem that loses fish also loses the species that depend on fish for survival.

This state has been defined as a ‘monoculture of jellyfish’, an apt analogy since the situation shares similarities with other monocultures. When the rich biodiversity of tropical forests is replaced by plantations growing a single species of tree, an area of rich variety becomes a desert in terms of biodiversity, as do ocean ecosystems when jellyfish become the dominant species.

One result of large jellyfish populations is the economic effect it has had on the fishing industry. In the Gulf of Mexico, shrimp fishermen are struggling with a jellyfish boom that fills nets, causing them to break and resulting in millions of dollars in losses.

G Experts say that a greater understanding of jellyfish, including their ideal water temperature and feeding habits, is necessary to determine with certainty what is causing the recent massive invasion and to come up with ways to combat it.

Due to the difficulty of turning ecosystems around once jellyfish have become dominant, Richardson and his colleagues propose focusing on ‘prevention rather than cure’. They recommend a halt to overfishing small fish that are vital to keeping jellyfish in check, reducing the amount of fertilizer and sewage running off into the oceans, and finally, if possible, confronting climate change.

Questions 14—17

Reading Passage 2 has seven sections, ***A–G****.*

Which paragraph contains the following information?

Write the correct letter, ***A–G****, in boxes 14–17 on your answer sheet.*

14 a prediction as to the direction in which the jellyfish population may spread

15 a description of some physical characteristics of jellyfish

16 an account of the consequences of jellyfish as lone survivors

17 suggestions on how to avoid further jellyfish invasions

Questions 18 and 19

Choose ***TWO*** *letters,* ***A–E****.*

Write the correct letters in boxes 18 and 19 on your answer sheet.

The list below gives some effects that jellyfish have had on the world.

Which **TWO** of these effects are mentioned by the writer of the text?

- **A** They have damaged the tourism industry in some areas.
- **B** They have led to a reduction in the oceans' oxygen levels.
- **C** They have contributed to the decline in the Black Sea anchovy population.
- **D** They have caused the shrimp business in the Gulf of Mexico to shut down.
- **E** They have created financial hardship in the fishing industry.

Questions 20 and 21

*Choose **TWO** letters, **A–E**.*

Write the correct letters in boxes 18 and 19 on your answer sheet.

Which **TWO** of the following are possible causes of an increase in jellyfish numbers?

A a shortage of small fish in the oceans
B the dumping of chemicals into the oceans
C a decline in biodiversity in the oceans
D more competition among other fish in the oceans
E a decrease in seabird populations

Questions 22–26

Complete the sentences below.

*Write **ONE WORD ONLY** from the passage for each answer.*

Write your answers in boxes 22–26 on your answer sheet.

22 Some fish in the oceans may be unable to sustain their population as the jellyfish eat their _____.

23 The state of jellyfish becoming the main ocean species has been named _____.

24 Increasing numbers of jellyfish can damage _____ used for commercial fishing.

25 Understanding basic facts about jellyfish, such as the _____ of the ocean which suits them best, may help control their numbers.

26 Richardson believes it is better to direct attention to _____, instead of just trying to solve existing problems.

段落匹配（14–17）

题号	答案	题干译文	关键定位句（段落）	解析（同义替换与排除）
14	**E**	预言水母种群可能向哪个**方向**扩散	“**As water warms, tropical species are moving towards the poles.** Many venomous jellyfish species are tropical and could move into more densely populated subtropical and temperate regions.” (E)	“moving **towards the poles**”=向两极扩散的**方向性**预测。
15	**A**	对水母若干**外形/生理特征**的描述	“they **lack sharp claws, piercing teeth or even a brain**… the stinging power of their **tentacles**.” (A)	题干中的 “physical characteristics” 对应 A 段对**没有爪/牙/脑、触手会蜇**的描写。
16	**F**	当水母几乎成了 “**唯一幸存者**” 时的后果	“two alternate states… **jellyfish-dominated** … **does not support the nutritional needs of other fish, marine mammals, and seabirds**.” (F)	“lone survivors” 对应**低氧等情境下水母存活** →F 段给出**生态后果**（食物网受损）。
17	**G**	如何**避免**进一步的水母入侵的建议	“focus on **‘prevention rather than cure’**… halt **overfishing**… **reducing** fertilizer and sewage… **confronting climate change**.” (G)	明确的**对策/建议**只在 G 段提出。

多选（18–19）

问题译文：下面哪两项是作者在文中提到的 “水母对世界造成的影响”？

答案：C, E

选项	判断	关键定位句	解析
A 旅游业受损	**不选**	“have become the **curse of beach holidays**” (A)	虽然暗示度假体验变差，但文中**未明确说到旅游业**的实际损失/受损，因此不如 C/E 明确。
B 氧气下降	**不选**	“algae blooms… **lower oxygen**… **These low-oxygen waters give jellyfish the advantage**.” (D)	氧气下降由**富营养化 → 藻华**造成，并非 “水母导致氧气降低”。
C 黑海凤尾鱼减少	**选**	“Mnemiopsis leidyi **devastated** the Black Sea… feeding on **anchovy eggs** and the plankton that young fish rely on.” (B)	直接说明水母入侵导致凤尾鱼种群受打击。
D 墨湾虾业关停	**不选**	“shrimp fishermen are **struggling**… nets… break… **millions of dollars in losses**.” (F)	说的是**困难/损失**，并未写 “**关停**”。
E 渔业财务困难	**选**	同上 (F)	“millions of dollars in **losses**”=对渔业造成**财务困境**。

多选（20–21）

问题译文：以下哪两项**可能导致**水母数量上升？

答案：A, B

选项	判断	关键定位句	解析
A 海洋中小型鱼类短缺	**选**	“Overfishing… **small fish** appear to keep jellyfish in check… **once we remove fish, jellyfish can proliferate**.” (D)	过度捕捞 → 小鱼减少 → **水母失去制衡** → 数量上升。
B 向海洋倾倒化学物	**选**	“**Eutrophication**… increase of **nitrogen and phosphorus**… fertilizer and waste run-off… jellyfish… **thrive**.” (D)	化肥/污水（化学物投入）→ 富营养化 → 低氧 → **水母增多**。
C 生物多样性下降	不选	（无直接因果）	文中 “单一水母文化” 是**结果**，非 “原因”。
D 其他鱼类竞争更激烈	不选	“competition (when feeding)… **keep jellyfish in check**.” (D)	竞争**增强会压制**水母，而非导致增加。
E 海鸟数量下降	不选	—	文中未提及。

句填（22–26，一词作答）

题号	答案	题干译文	关键定位句	解析
22	**eggs**	有些鱼类可能无法维持种群，因为水母吃掉了它们的——	“feeding on **anchovy eggs** and the plankton that young fish rely on.” (B)	“sustain their population” 侧重**繁殖来源**，与 “**eggs**” 最佳匹配。
23	**monoculture**	水母成为海洋**主导物种**的状态被称为——	“This state has been defined as a ‘**monoculture** of jellyfish’.” (F)	要求单词；填 “monoculture”。
24	**nets**	水母增多会损坏用于商业捕捞的——	“jellyfish boom that **fills nets, causing them to break**.” (F)	明示被损坏的是**渔网**。
25	**temperature**	了解如最适合水母的海洋——有助于控制其数量	“a greater understanding… including their **ideal water temperature** and feeding habits” (G)	“the ___ of the ocean which suits them best” ↔ **water temperature**；一词作答为 **temperature**。
26	**prevention**	Richardson 认为应把注意力放在——而不是头痛医头	“focusing on ‘**prevention** rather than cure’.” (G)	直接同义替换即可。