MA99 EDUCATION

Ecosystems and Global Biodiversity: Summary

03

NSW GEOGRAPHY 11-12 SYLLABUS 2022 FOR HSC 2027 AND LATER

1. Key ideas

The whole focus area on one page. If a line here is unfamiliar, go back to the Topic Notes section named in brackets.

- **Ecosystems are connections.** Energy flows one way through trophic levels; nutrients cycle. Negative feedback stabilises, positive feedback drives change towards a tipping point. (TN 2.1)
- **Value comes in four kinds:** intrinsic, ecological, economic, cultural. Prove each with a figure: the Reef's $9 billion value added in 2023 to 24 (Deloitte, 2025); the Amazon's 16 per cent of biosphere photosynthesis (Science Panel for the Amazon). (TN 2.3)
- **IPBES ranks five direct drivers:** land and sea use change, direct exploitation, climate change, pollution, invasive species (Global Assessment, May 2019). (TN 3.2)
- **Vulnerability and resilience are different measures.** Vulnerability is how easily damage happens; resilience is recovery. Resilience needs time: at least a decade between bleachings for the fastest corals (IPCC AR6, 2022). (TN 3.3)
- **Biodiversity is declining on every measure:** 1 million species at risk (IPBES, 2019); an average 73 per cent decline in monitored populations, 1970 to 2020 (WWF, 2024); 49,505 of 175,909 assessed species threatened (IUCN, 9 July 2026). (TN 4)
- **Boundaries and tipping points:** seven of nine planetary boundaries breached (PIK, 24 September 2025). Warm water coral reefs have passed their thermal tipping point; Amazon dieback is next at risk (Global Tipping Points Report, 13 October 2025). (TN 4.5)
- **Management works at three scales** and succeeds when one threat meets one tool, one measure and steady funding: Macquarie Island, the numbat, the Montreal Protocol. (TN 5)
- **Indigenous peoples manage large areas now:** IPAs are more than half of Australia's reserve system; 10 TUMRAs cover over 43 per cent of the Reef coastline; Indigenous territories and protected areas held only 6.5 per cent of pan-Amazon vegetation loss, 1985 to 2023. (TN 6)
- **The two case studies fail in opposite ways.** The Reef's main threat, ocean heat, is global. The Amazon's main threat, clearing, is national, and falls when politics backs enforcement. (TN 9 and 10)

2. Numbers to know

NUMBER	WHAT IT IS	SOURCE
1 million	Species facing extinction	IPBES, 2019
73 per cent	Average decline in monitored populations, 1970 to 2020	WWF LPR, 2024
49,505	Threatened species of 175,909 assessed (28.1 per cent)	IUCN, 9 July 2026
7 of 9	Planetary boundaries breached	PIK, 24 September 2025
1.2 °C	Coral reef tipping threshold; warming now about 1.3 °C	GTPR, 13 October 2025
17.6 and 8.4 per cent	Land and sea protected, against 30 by 30	Protected Planet, 2024
87	Indigenous Protected Areas: 90 million ha land, 6 million ha sea	NIAA, 2026
35.1, 31.6, 26.4 per cent	Coral cover, North, Central, South, 2025 to 26	AIMS, 11 August 2026
38.9 to 26.9 per cent	Southern fall, 2024 to 2025: largest on record	AIMS, 6 August 2025
33 per cent	Marine Park in no-take or no-entry zones	GBRMPA

NUMBER	WHAT IT IS	SOURCE
1.4 million	COTS removed since 2012, across 451 reefs	GBRMPA, January 2026
$5 billion+	Reef investment by both governments, 2014 to 2030	DCCEEW
5,731 km²	PRODES deforestation, 2025	INPE, 18 August 2026
20 to 25 per cent	Amazon tipping threshold	Lovejoy and Nobre, 2018
6.5 per cent	Pan-Amazon vegetation loss inside Indigenous and protected areas	MapBiomas, 2024
72.4 per cent	Norway's share of Amazon Fund donations	BNDES, May 2026

3. The Great Barrier Reef

Case card · Great Barrier Reef, coral reef, Australia

Characteristics: Marine Park 344,400 km², about 2,300 km long; some 3,000 reefs; 450 hard corals, 1,625 fish (GBRMPA). World Heritage 1981. **Functioning:** coral and zooxanthellae symbiosis builds the reef; herbivorous fish keep space for recruits; COTS a native predator. **Disturbance:** mass bleaching in 1998, 2002, 2016, 2017, 2020, 2022, 2024, 2025 (AIMS); 2024 bleaching prevalent on 73 per cent of surveyed reefs. **Human modifications:** marine heatwaves; sediment and nitrogen runoff (2025 targets missed, UNESCO); COTS outbreaks; fishing. **Management:** zoning 2004 (no-take 4.5 to 33 per cent); Reef 2050 Plan (2015); more than $5 billion, 2014 to 2030; COTS control; water quality strategy (May 2026); TUMRAs. **Research:** AIMS monitoring (40 years); RRAP (from April 2020); SeaSim; Coral IVF; eReefs. **Status:** Outlook "very poor" (GBRMPA, 2024). Not listed "in danger" (World Heritage Committee, July 2026).

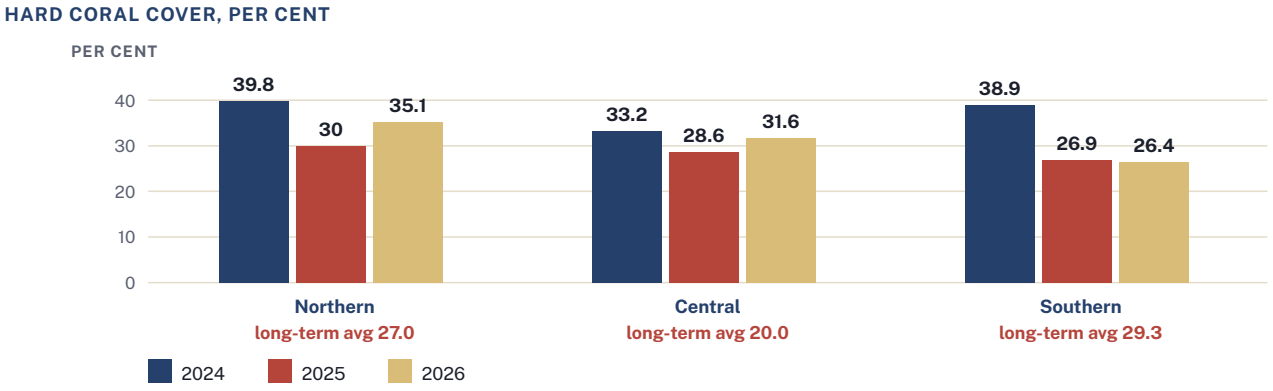


Figure 1 · Hard coral cover by AIMS region across the last three reports. Source: AIMS Annual Summary Reports 2024 to 25 (2024 values as revised) and 2025 to 26, released 11 August 2026.

4. The Amazon

Case card · The Amazon, tropical rainforest, South America

Characteristics: basin about 7 million km² across 8 countries and French Guiana; nearly 60 per cent in Brazil; about 16,000 tree species; nearly 2.2 million Indigenous people (Science Panel for the Amazon; WWF). **Functioning:** recycles about half its own rainfall (Lovejoy and Nobre, 2018); nutrients held in biomass; 150 to 200 billion tonnes of carbon. **Disturbance:** Rio Negro at Manaus lowest since 1902 in October 2024; about 15 million ha burned in 2024 (WMO). **Human modifications:** pasture 12.3 to 56.1 million ha, 1985 to 2024 (MapBiomas); soy; mining; roads BR-163 and BR-319. **Tipping point:** 20 to 25 per cent deforestation (Lovejoy and Nobre); 18 per cent converted, at least 17 per cent degraded (Science Panel for the Amazon). **Management:** PPCDAm (2004; zero deforestation goal for 2030); Soy Moratorium; Amazon Fund (R$5.256 billion); 839 Indigenous Lands, 14.8 per cent of Brazil; TFFF (November 2025); EU Deforestation Regulation (from 30 December 2026). **Research:** PRODES (since 1988), DETER, MapBiomas, AmazonFACE, ATTO.

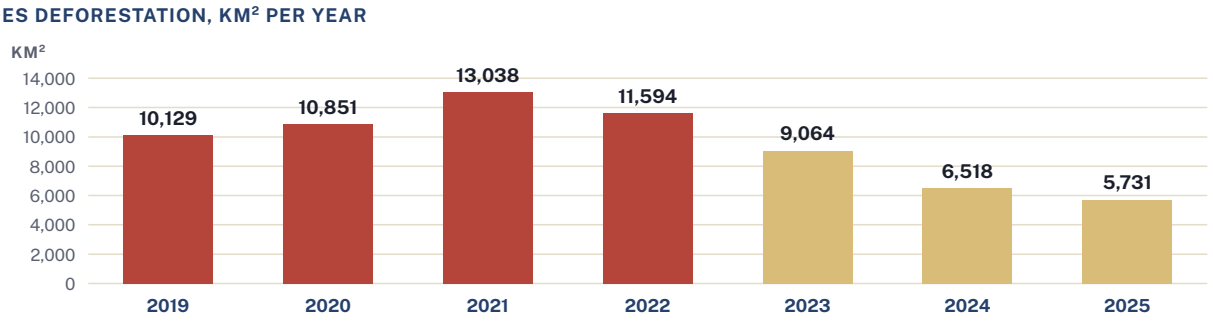


Figure 2 · PRODES clear cut deforestation, Brazilian Legal Amazon, every year from 2019. Source: MMA Nota Técnica 13a/2025, 26 September 2025; INPE, 18 August 2026.

Red is the Bolsonaro government, gold the Lula government. Averages: 11,403 km^2 a year for 2019 to 2022 and 7,104 km^2 for 2023 to 2025. 2025 is 56 per cent below 2021 and the lowest in 11 years. Historic peak: 29,059 km^2 in 1995; low: 4,571 km^2 in 2012.

5. Management at a glance

STRATEGY	SCALE	EVIDENCE IT WORKS	LIMIT
Reef zoning, 2004	National	More fish, more resilience in no-take zones	Cannot stop heat
Reef 2050 water quality	State, regional	Progress on all four 2025 targets	Sediment and DIN targets missed
COTS Control Program	Local	Cover up on 85 per cent of managed reefs (modelled)	About 200 reefs a year
PPCDAm	National	84 per cent fall, 2004 to 2012	Rose again 2019 to 2021
Soy Moratorium	Private, national	Ending it projected to add 1.4 million ha of clearing in a decade	Traders exited 2026; states may penalise firms
Amazon Fund	International finance	Record approvals, R$882 million, 2024	Frozen in 2019
Indigenous Lands	National, local	With protected areas, 6.5 per cent of pan-Amazon loss	Mining invasions, Yanomami
TUMRAs, rangers, savanna burning	Local	43 per cent of Reef coastline; 76 burning projects by 2020	Depends on ongoing funding

6. Key terms

TERM	MEANING
Dynamic equilibrium	A system that changes but stays within a stable range
Vulnerability	How easily an ecosystem is damaged by a stress
Resilience	Capacity to absorb a disturbance and recover
Ecological integrity	An ecosystem with its species, processes and structure intact
Biocapacity	Capacity of ecosystems to regenerate resources and absorb waste
Tipping point	A threshold past which a system shifts state and does not return
Degree heating weeks	Heat above the bleaching threshold accumulated over 12 weeks
Recovery debt	Species and functions that do not return when cover does

TERM	MEANING
Flying rivers	Moisture recycled westward through the forest by transpiration
TUMRA	Traditional Use of Marine Resources Agreement, accredited in law

7. If the question says … use …

IF THE QUESTION SAYS	USE
Explain the value of ecosystems	Four values, each with a figure: Deloitte, IPBES pollinators, Science Panel for the Amazon
Distinguish vulnerability and resilience	Reef 2024 bleaching against Acropora recovery 2017 to 2024
Account for the global state of biodiversity	IPBES drivers, then LPI and Red List figures
Explain tipping points	GTPR 2025 on reefs; Lovejoy and Nobre on the Amazon, with the feedback loop
Describe a successful program	Macquarie Island or the numbat, with before and after numbers
Explain the role of Indigenous peoples	IPAs, savanna burning, TUMRAs, Brazil's Indigenous Lands
Analyse functioning of ONE ecosystem	Symbiosis, herbivory, COTS; or rainfall recycling and nutrient cycling
Analyse human induced modifications	Heat, runoff, COTS; or pasture, soy, mining, roads, with PRODES
Evaluate management for TWO ecosystems	Reef: zoning, COTS, water quality. Amazon: PPCDAm, Moratorium, Fund. Judge each
Account for differences in management	GDP, export mix, election swings, land rights against co-management
Explain research and innovation	AIMS monitoring and RRAP; PRODES, DETER and AmazonFACE

> Every claim gets a number, a year and a source. That is the whole difference between Band 4 and Band 6.

About this resource

MA99 EDUCATION

Scope

NSW Geography, Year 12. Written to the NSW Geography 11-12 Syllabus 2022, Ecosystems and Global Biodiversity, for students sitting the HSC in 2027 and later years. Every worked context uses real, sourced case studies: the Great Barrier Reef and the Amazon rainforest, with each figure dated and its source named where it is used, and every number was recomputed from its inputs before printing.

Permitted use

Print it, annotate it and keep it on any device you own, for your own study.

Not permitted

Sharing, posting, selling or redistributing it, in whole or in part. Each copy is licensed to one student.

Copyright MA99 Education.
ma99education.com.au

MA99 EDUCATION

Ecosystems and Global Biodiversity: Practice Questions

03

NSW GEOGRAPHY 11-12 SYLLABUS 2022 FOR HSC 2027 AND LATER

1. Instructions

How to use this workbook. Work through the sections in order at least once, then return to the section your self check in the Topic Notes sent you to. Time yourself on anything above 6 marks: the HSC gives you about 1.8 minutes a mark. Every figure uses real, sourced data, and every answer in the marking guidance uses the same case study evidence as the Topic Notes.



Figure 1 · How the 140 marks are spread across the four sections. Section D is a bank of three essays: write one in full each time.

What a strong answer does at every mark value

Answer the verb. Name the ecosystem, process or strategy. Give a figure with its year and source. For anything worth 6 marks or more, end with a judgement.

2. Section A · Short answer, 2 to 4 marks

Answer in two to five sentences. These test the key terms and one piece of case study evidence each.

Question A1

2 MARKS

Distinguish between the vulnerability and the resilience of an ecosystem.

Question A2

3 MARKS

Outline the three levels at which biodiversity is measured, with an example of each.

Question A3

2 MARKS

Identify the five direct drivers of biodiversity loss in the order ranked by IPBES in 2019.

Question A4

3 MARKS

Explain how the relationship between coral polyps and zooxanthellae supports the functioning of a coral reef.

Question A5

4 MARKS

Describe how a positive feedback loop could push a tropical rainforest towards a tipping point.

Question A6

2 MARKS

State Target 3 of the Kunming-Montreal Global Biodiversity Framework and one reason coverage alone does not show it has been met.

Question A7

3 MARKS

Outline ONE successful conservation program, including evidence of its success.

Question A8

3 MARKS

Explain ONE way Indigenous peoples contribute to contemporary ecosystem management in Australia.

3. Section B · Stimulus based, 6 to 8 marks

Read each figure before you read its question. Use the figure's numbers in your answer, and show working for every calculation.

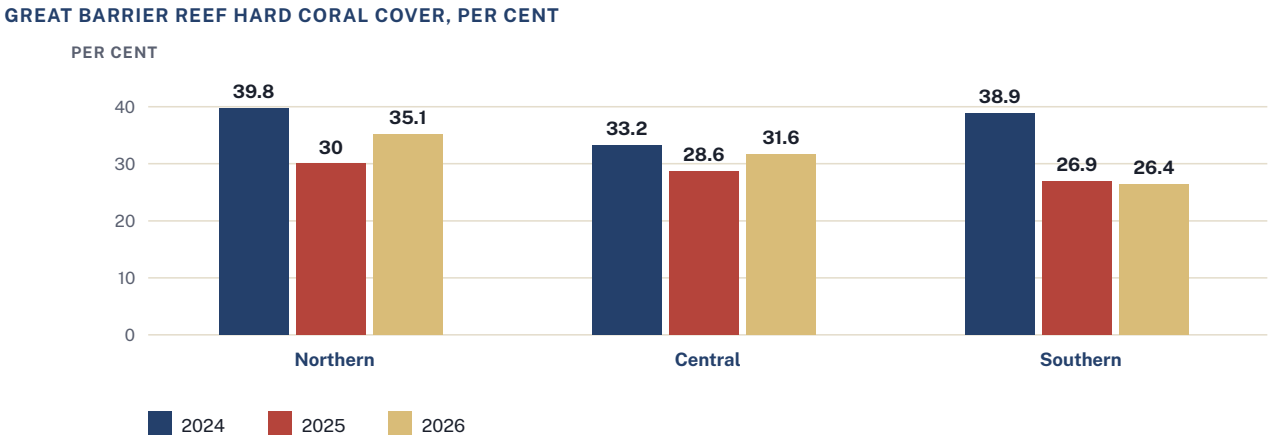


Figure 2 · Hard coral cover by AIMS region in three annual reports. Source: AIMS Annual Summary Reports 2024 to 25 (2024 values as revised, released 6 August 2025) and 2025 to 26 (released 11 August 2026).

Question B1

7 MARKS

Refer to Figure 2.

(a) Identify the region with the largest fall in coral cover between 2024 and 2025, and state the fall in percentage points. (1 mark)

(b) Calculate the percentage change in Central region coral cover between 2024 and 2025. Show your working. (2 marks)

(c) Explain why coral cover in the Southern region continued to fall in 2026 while Northern cover rose. (4 marks)

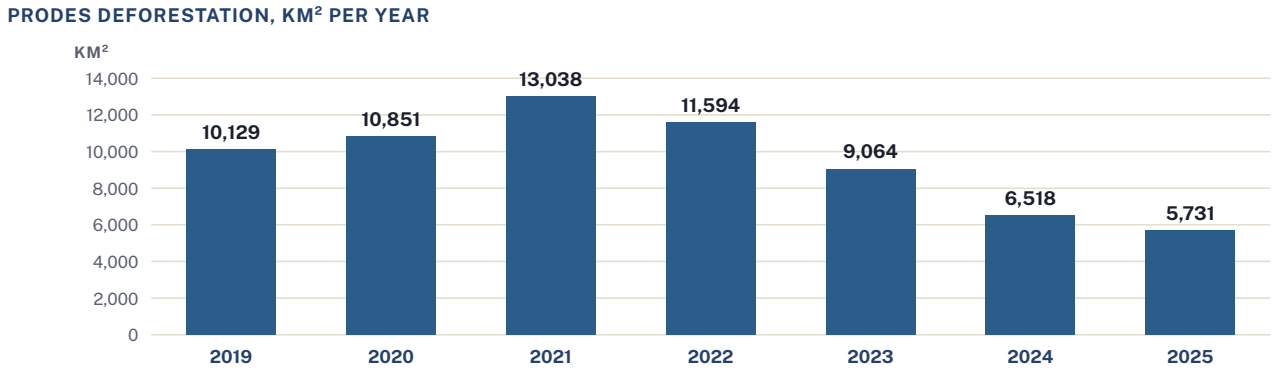


Figure 3 · Annual clear cut deforestation in the Brazilian Legal Amazon (PRODES years run 1 August to 31 July). Source: MMA and Amazon Fund, Nota Técnica 13a/2025 (2019 to 2023); INPE, 15 October 2025 (2024) and 18 August 2026 (2025).

Question B2

8 MARKS

Refer to Figure 3.

(a) Calculate the average annual deforestation for 2019 to 2022 and for 2023 to 2025. Show your working. (2 marks)

(b) Calculate the percentage change in deforestation between 2021 and 2025. Show your working. (2 marks)

(c) Explain how political factors account for the pattern shown in Figure 3. (4 marks)

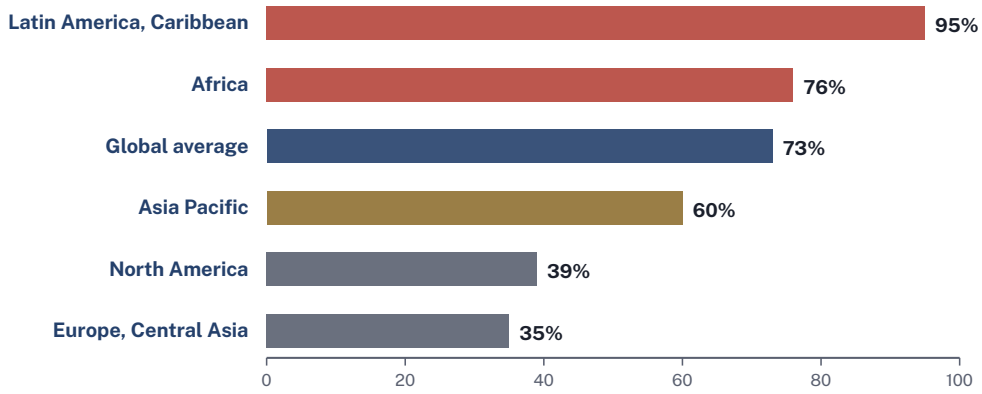


Figure 4 · Average decline in monitored vertebrate populations by region, 1970 to 2020. Source: WWF Living Planet Report 2024, released 10 October 2024, reported by Down To Earth.

Question B3

6 MARKS

Refer to Figure 4.

(a) Identify the region with the smallest average decline. (1 mark)

(b) Explain TWO drivers that help account for the decline shown for Latin America and the Caribbean. (3 marks)

(c) Outline ONE limitation of using the Living Planet Index to describe the state of biodiversity. (2 marks)

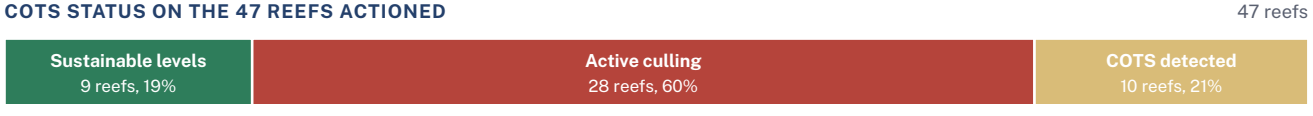


Figure 5 · Crown-of-thorns starfish status on reefs actioned by the COTS Control Program, to 30 August 2026. Source: GBRMPA, Reef health update, September 2026.

Question B4

7 MARKS

Refer to Figure 5. Since 2012 the COTS Control Program has protected more than 830,000 hectares of reef habitat at about $175 per hectare (GBRMPA, January 2026).

(a) Calculate the approximate total cost of protecting 830,000 hectares at $175 per hectare. Show your working. (2 marks)

(b) Using Figure 5, describe the status of crown-of-thorns starfish on the reefs actioned. (2 marks)

(c) Assess the COTS Control Program as a response to a human induced modification of the Great Barrier Reef. (3 marks)

4. Section C · Paragraph response, 6 to 9 marks

Write one structured paragraph, or two short ones: a sentence that answers the question, sourced evidence, and a closing judgement.

Question C1

6 MARKS

Explain the role of contemporary research and innovation in managing ONE ecosystem you have studied.

Question C2

8 MARKS

Account for differences in the management of TWO ecosystems you have studied, referring to economic, political and sociocultural factors.

Question C3

7 MARKS

Assess the extent to which global management strategies can protect biodiversity.

Question C4

9 MARKS

Analyse the vulnerability and resilience of ONE ecosystem you have studied to natural and human induced stresses.

5. Section D · Extended response, 20 marks

Answer each question in a separate writing booklet. Aim for 800 to 1,000 words in about 35 minutes.

Question D1

20 MARKS

Analyse how human induced modifications have affected the functioning of TWO different ecosystems you have studied.

Write your response in a separate writing booklet.

Question D2

20 MARKS

To what extent are ecosystems approaching tipping points? In your answer, refer to global biodiversity trends and to TWO different ecosystems you have studied.

Write your response in a separate writing booklet.

Question D3

20 MARKS

Evaluate the effectiveness of management strategies at different scales, including the role of Indigenous peoples, in sustaining TWO different ecosystems you have studied.

Write your response in a separate writing booklet.

6. Marking guidance

Mark your response accurately before you read the Exemplar Response. The guidance gives what a full mark answer contains. The criteria for Section D are MA99's own, written in the style of NESA marking guidelines.

6.1 Section A

Q	MARKS	WHAT A FULL MARK ANSWER CONTAINS
A1	2	Vulnerability is how easily an ecosystem is damaged by a stress (1); resilience is its capacity to absorb a disturbance and recover to a similar state (1). Full marks need the two clearly separated, ideally with an example such as the Reef bleaching in 2024 yet recovering between 2017 and 2024.
A2	3	Genetic diversity, variation within a species, for example heat tolerant far-northern corals used in AIMS assisted gene flow (1). Species diversity, for example about 16,000 Amazon tree species (ter Steege et al., 2013) (1). Ecosystem diversity, for example the Amazon's more than 50 interconnected ecosystems (1).
A3	2	Changes in land and sea use; direct exploitation of organisms; climate change; pollution; invasive alien species (2 for all five in order, 1 for all five in the wrong order or four correct).
A4	3	Zooxanthellae live in coral tissue and photosynthesise, passing as much as 90 per cent of their organic production to the coral (NOAA) (1). The coral uses that energy to lay down calcium carbonate, building the reef habitat (1). Under heat stress the coral expels the algae and bleaches, so the partnership is the reef's point of vulnerability (1).
A5	4	A sequence with links: clearing reduces transpiration (1); less moisture is recycled westward, so rainfall falls and the dry season lengthens (1); stressed trees die and the forest becomes more flammable, so fire spreads (1); more forest is lost and the loop repeats until the system flips, which Lovejoy and Nobre (2018) place at 20 to 25 per cent deforestation (1).
A6	2	At least 30 per cent of land, inland water, coastal and marine areas effectively conserved and managed by 2030 (1). Coverage does not show quality: only 8.52 per cent of land is both protected and connected, and 32 per cent of Key Biodiversity Areas lie outside protected areas (Protected Planet Report 2024) (1).
A7	3	A named program (1), its method (1) and measured evidence (1). For example: Macquarie Island, an A$24 million rabbit and rodent eradication announced in 2007, pest free on 8 April 2014 with seabirds increasing; or the numbat, from about 300 in the late 1970s to 2,000 to 3,000 and downlisted in July 2026 (IUCN).
A8	3	Names the contribution (1), a specific example (1) and how it operates as current management (1). For example: savanna burning reduces late dry season wildfires and earns carbon credits, with 76 projects over more than 30 million hectares by January 2020, nearly half Indigenous managed (ABC News); or IPAs, more than half the National Reserve System; or 10 TUMRAs covering over 43 per cent of the Reef coastline.

6.2 Section B

Q	MARKS	WHAT EARNS THEM
B1 (a)	1	Southern: 38.9 minus 26.9 is a fall of 12.0 percentage points.
B1 (b)	2	(28.6 minus 33.2) ÷ 33.2 × 100 = minus 4.6 ÷ 33.2 × 100 = minus 13.9 per cent (1 for working, 1 for the answer). AIMS reports the same 13.9 per cent.
B1 (c)	4	The 2024 heat stress in the south exceeded 10 DHW and killed corals of most taxa down into deeper habitats (AIMS, 2026), so there were few survivors to regrow (1 to 2). The north was also bleached in 2024 and 2025, but without the south's deep, multi taxa mortality its surviving corals regrew, from 30.0 to 35.1 per cent (1). Recovery needs at least a decade after each bleaching (IPCC, 2022), and repeated events shorten it (1). A strong answer notes the south is now below its long term average of 29.3 per cent.
B2 (a)	2	(10,129 + 10,851 + 13,038 + 11,594) ÷ 4 = 11,403 km^2; (9,064 + 6,518 + 5,731) ÷ 3 = 7,104 km^2. 1 for each with working.
B2 (b)	2	(5,731 minus 13,038) ÷ 13,038 × 100 = minus 7,307 ÷ 13,038 × 100 = minus 56.0 per cent. 1 for working, 1 for the answer.

Q	MARKS	WHAT EARNS THEM
B2 (c)	4	Clearing rose under the Bolsonaro government to 13,038 km^2 in 2021, then fell every year, most steeply after the 2022 election (9,064 in 2023, 6,518 in 2024) (1). PPCDAm's fifth phase from June 2023 restored enforcement guided by DETER alerts (1). Norway and Germany froze Amazon Fund disbursements in 2019 and resumed after 2022, so finance followed politics (1). State politics pull the other way: Mato Grosso clearing rose 26.73 per cent in 2025 (1).
B3 (a)	1	Europe and Central Asia, 35 per cent.
B3 (b)	3	Land use change, the top IPBES driver: pasture in the Brazilian Amazon grew from 12.3 to 56.1 million hectares, 1985 to 2024 (MapBiomas) (1 to 2). A second driver, such as direct exploitation through illegal gold mining in the Yanomami Indigenous Land, or climate change through drought and fire, with evidence (1 to 2).
B3 (c)	2	It is an average change in population size, not a count of animals lost, so a few collapsing populations can pull it down (1). It covers about 35,000 monitored populations of 5,495 vertebrate species, so it omits plants and invertebrates and is weighted to well studied places (1).
B4 (a)	2	830,000 × $175 = $145,250,000, about $145 million. 1 for working, 1 for the answer.
B4 (b)	2	Of 47 reefs actioned, only 9 (19 per cent) were at sustainable levels (1); 28 (60 per cent) needed active culling and COTS were detected on another 10 (21 per cent), consistent with a new outbreak wave (1).
B4 (c)	3	Effective locally: almost 1.4 million starfish removed across 451 reefs and coral cover improved on 85 per cent of managed reefs in a UQ model (1). Limited: it reaches about 200 of some 3,000 reefs a year and removes starfish without removing the nutrient runoff and predator loss suspected of causing outbreaks (1). A judgement: effective at protecting recovery on priority reefs, not at the cause (1).

6.3 Section C

Q	MARKS	WHAT A FULL MARK ANSWER CONTAINS
C1	6	Research makes management measurable and targeted. Reef: AIMS long-term monitoring (40 years) shows where cover falls; RRAP ($150 million R&D phase from April 2020) tests heat tolerant corals and cloud brightening; SeaSim; Coral IVF. Or Amazon: PRODES since 1988 and DETER alerts down to about 3 ha direct PPCDAm enforcement; AmazonFACE tests the forest's CO_2 response. Top answers judge a limit: Reef interventions are still at pilot scale, and alerts only work with enforcement.
C2	8	Economic: Australian GDP per person US$65,130 against Brazil's US$10,713 (2025); Reef tourism depends on a healthy reef while cattle and soy depend on clearing; food is 40.7 per cent of Brazil's exports. Political: bipartisan Reef 2050 Plan against clearing that swung from 11,403 to 7,104 km^2 a year with a change of government; UNESCO pressure on Australia. Sociocultural: TUMRAs as co-management of sea Country against Indigenous land rights on 14.8 per cent of Brazil. The best answers explain how each factor changes the strategy chosen.
C3	7	Global strategies set targets and can work when the threat is specific: the Montreal Protocol phased out nearly 99 per cent of banned ozone depleting substances. The GBF sets 30 by 30, but coverage is 17.6 per cent of land and 8.4 per cent of sea (Protected Planet Report 2024), and quality lags. Global finance such as the TFFF has US$7.3 billion pledged against a US$10 billion milestone. Judgement: global strategies depend on national enforcement and cannot on their own reverse declines such as the 73 per cent LPI average.
C4	9	Vulnerability and resilience separated, for both natural and human stress, with evidence. Reef example: cyclones (Ita, 85 per cent cover loss at North Reef) as natural stress; mass bleaching in 2016, 2017, 2020, 2022, 2024 and 2025; resilience through Acropora recovery and herbivory; recovery debt at Lizard Island (76 to 49 species). Or Amazon: El Niño drought; clearing, fire and the 2024 Rio Negro low; over three quarters losing resilience (Boulton et al., 2022). A strong answer analyses how human stress shortens recovery time.

6.4 Section D

Q	MARKS	INDICATIVE CONTENT, AND WHAT THE JUDGEMENT MUST WEIGH
D1	20	Reef: marine heatwaves disrupt symbiosis and calcification (2024 bleaching on 73 per cent of reefs; Southern cover 38.9 to 26.9 per cent); runoff blocks light and feeds COTS outbreaks; fishing removes COTS predators. Amazon: clearing breaks rainfall recycling; clearing and fire remove the nutrient store and turned the south east into a carbon source (Gatti et al., 2021); resilience loss. The judgement weighs which modification most changes functioning in each, and whether it can be reversed.
D2	20	Global trends: 1 million species at risk, 73 per cent LPI decline, seven of nine boundaries breached. Reefs: GTPR 2025 found warm water reefs past their thermal tipping point at about 1.2 °C, with warming about 1.3 °C; the Reef's shrinking recovery windows. Amazon: 20 to 25 per cent threshold against about 18 per cent converted and at least 17 per cent degraded; resilience loss; but clearing down 56 per cent, 2021 to 2025. The judgement distinguishes a system past its threshold from one approaching it.
D3	20	Scales: global (GBF, World Heritage, TFFF), national (Reef 2050 Plan, PPCDAm, Amazon Fund), local (COTS culling, TUMRAs, rangers). Indigenous role: TUMRAs over 43 per cent of the Reef coastline; Traditional Owner water quality and COTS work; Indigenous territories and protected areas with only 6.5 per cent of pan-Amazon loss. Evaluation by outcome, cause, scale and durability, ending with a judgement for each ecosystem.

Criteria for a 20 mark response

MARKS	CRITERIA
17 to 20	Sustained, logical and cohesive response that answers the question directly with a clear, supported judgement. Detailed, accurate knowledge of both ecosystems. Relevant case study evidence and geographical terms integrated throughout.
13 to 16	Logical response with a judgement. Sound knowledge of both ecosystems. Relevant evidence and terms, mostly sustained.
9 to 12	Some analysis or assessment, with generally accurate knowledge and some evidence. Tends to describe; the judgement is stated rather than argued.
5 to 8	Mainly descriptive. Some relevant information, possibly about one ecosystem only.
1 to 4	Limited or general information.

> Mark yourself before you read the Exemplar. The gap you find is the thing worth fixing.

IF YOU LOST MARKS ON	GO TO
Section A	Topic Notes sections 2 to 6, then the Summary's key terms
Section B	Topic Notes figures and the worked calculations in sections 4 and 8
Sections C and D	The Exemplar Response, then Topic Notes section 11

After you mark it

Circle every question where you lost more than a third of the marks. Those are your next session, in that order. A question you got right twice can wait; a question you got wrong once cannot.

Attempt record

Come back every few weeks and date it. Improvement in a written subject is invisible from the inside, which is why students who are getting better so often believe they are not.

DATE	SECTION ATTEMPTED	MARK	THE ONE THING TO FIX NEXT TIME

Fill one row every time you sit a section. A tracker with three rows in it is worth more than a perfect one you never started, because the pattern you are looking for only shows up across attempts, not inside one.

About this resource

MA99 EDUCATION

Scope

NSW Geography, Year 12. Written to the NSW Geography 11-12 Syllabus 2022, Ecosystems and Global Biodiversity, for students sitting the HSC in 2027 and later years. Every worked context uses real, sourced case studies: the Great Barrier Reef and the Amazon rainforest, with each figure dated and its source named where it is used, and every number was recomputed from its inputs before printing.

Permitted use

Print it, annotate it and keep it on any device you own, for your own study.

Not permitted

Sharing, posting, selling or redistributing it, in whole or in part. Each copy is licensed to one student.

Copyright MA99 Education.
ma99education.com.au