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Environmental systems and societies
Standard level
Paper 1 – resource booklet

Friday 30 October 2020 (afternoon)

1 hour

Instructions to candidates

- Do not open this booklet until instructed to do so.
- This booklet contains all the resources to answer paper 1.

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Figure 1(a): Location of Dominica

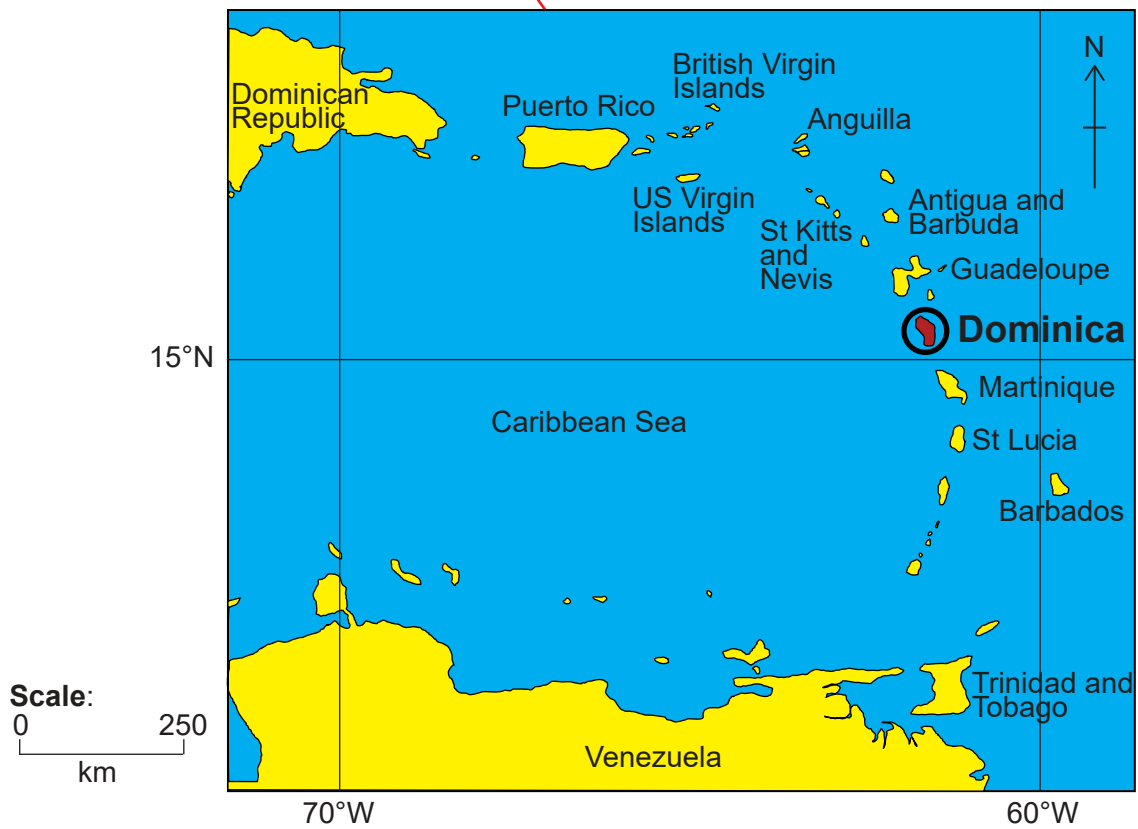
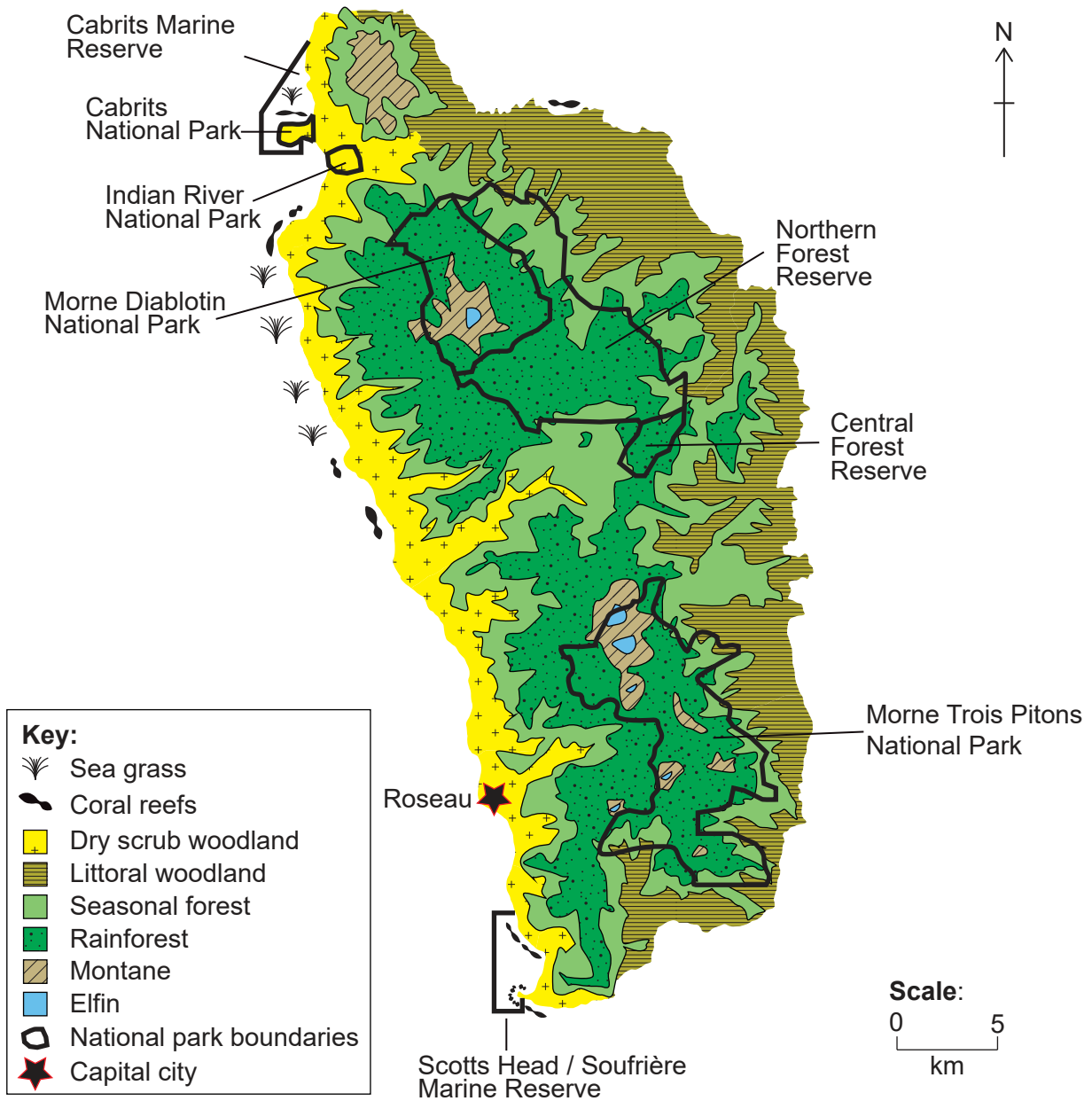


Figure 1(b): Fact file on Dominica

- Volcanic island in the Caribbean Sea.
- Population of 72 000.
- Self-sufficient in fruit and vegetables.
- 40% of the population works in agriculture.
- 60% of the island is covered in primary rainforest.
- Diversifying into ecotourism, particularly coral reef diving and whale watching.

Turn over

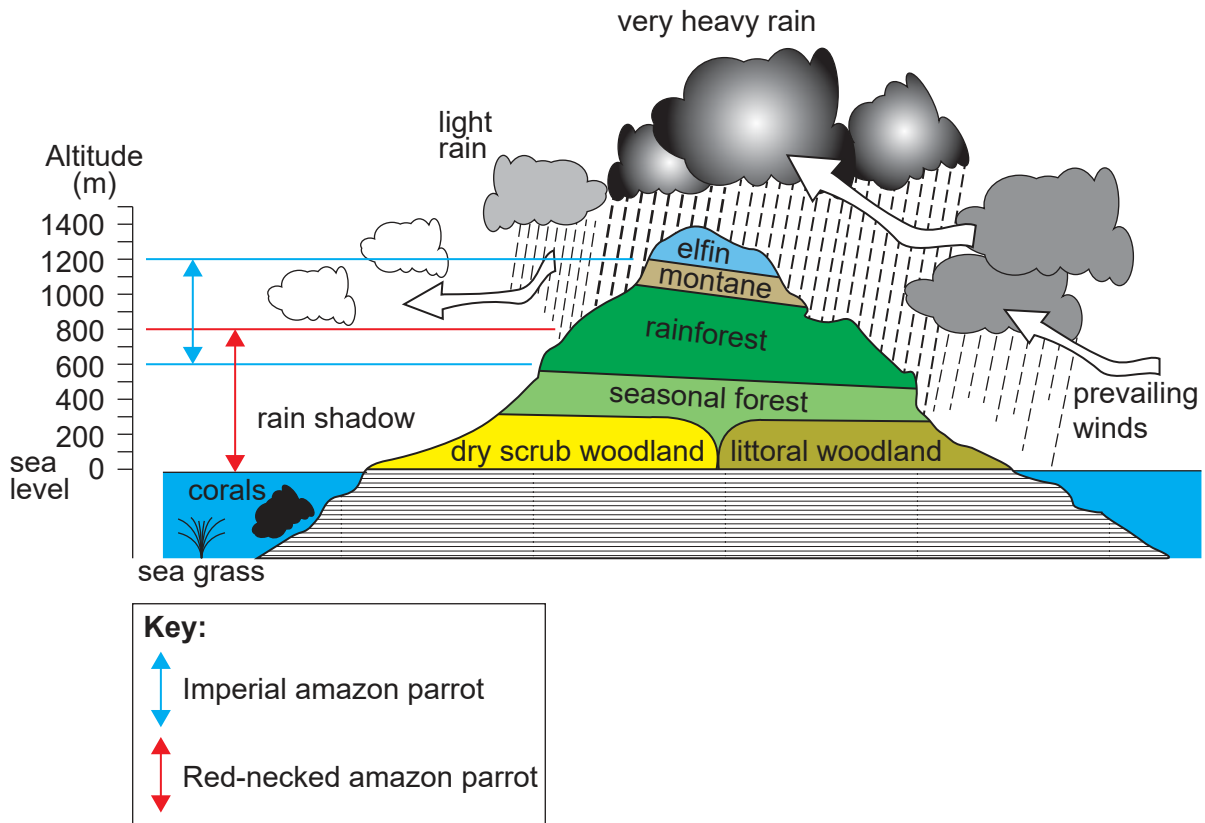
Figure 1(c): Ecosystems of Dominica



(Figure 1(c) continues on the following page)

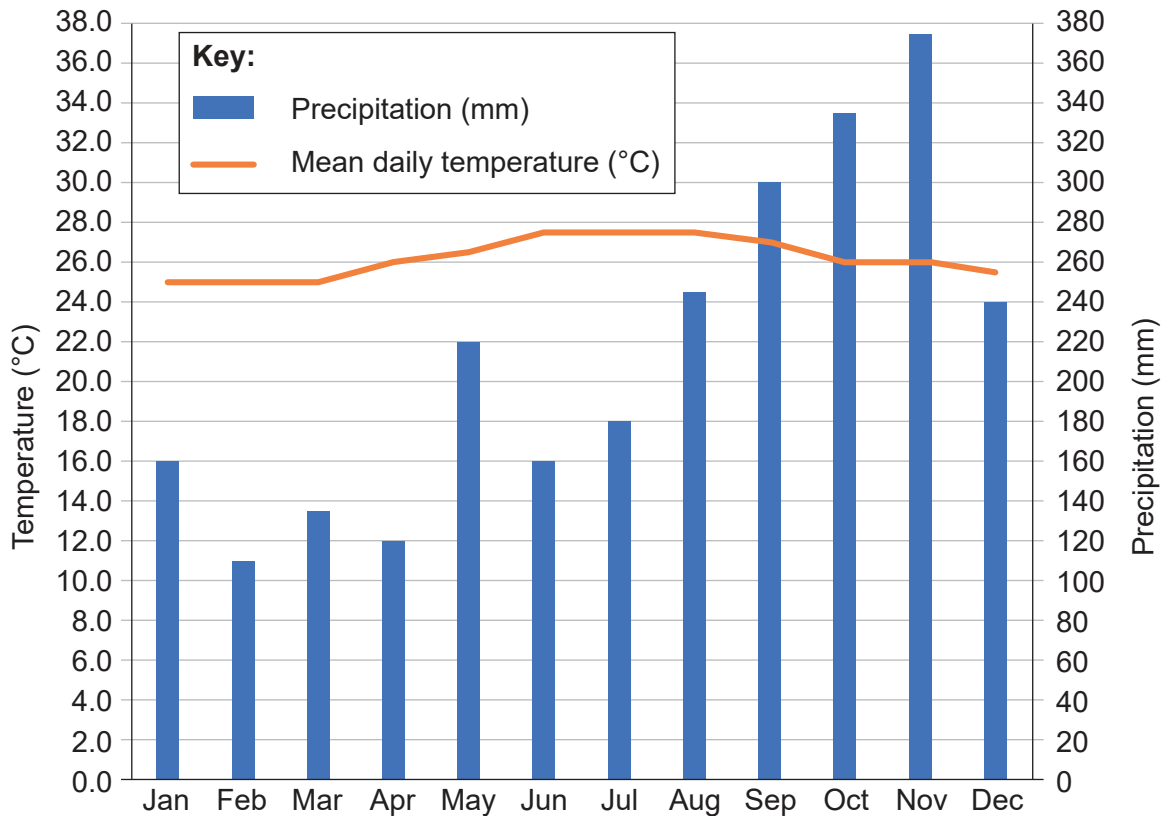
(Figure 1(c) continued)
West

East



[Source: *The Dominica Story: A History of the Island*. Lennox Honeychurch ©1995 Macmillan Education. Reproduced with permission of the Licensor through PLSclear.]

Figure 1(d): Climate graph for Roseau, Dominica



Turn over

Figure 2(a): Fact file about the red-necked and imperial amazon parrots



Red-necked amazon (<i>Amazona arausiaca</i>)	Imperial amazon (<i>Amazona imperialis</i>), the national bird of Dominica
	
<ul style="list-style-type: none">• Social, flies in groups of 30+ birds during the non-mating season.• Eats forest fruits and nuts; also feeds in banana and citrus plantations.• Lives between 0 m and 800 m in elevation.• Nests in holes in trees.• Endemic to Dominica.• IUCN Red List status: Vulnerable.	<ul style="list-style-type: none">• Shy, lives singly or in pairs.• Mates for life and may die if it loses its partner.• Territorial, guards nesting sites all year round.• Eats forest fruits and nuts.• Lives in dense forest.• Lives between 600 m and 1300 m in elevation.• Nests in holes in trees.• Endemic to Dominica.• IUCN Red List status: Endangered.

Figure 2(b): Changes in the numbers of individual imperial and red-necked amazon parrots

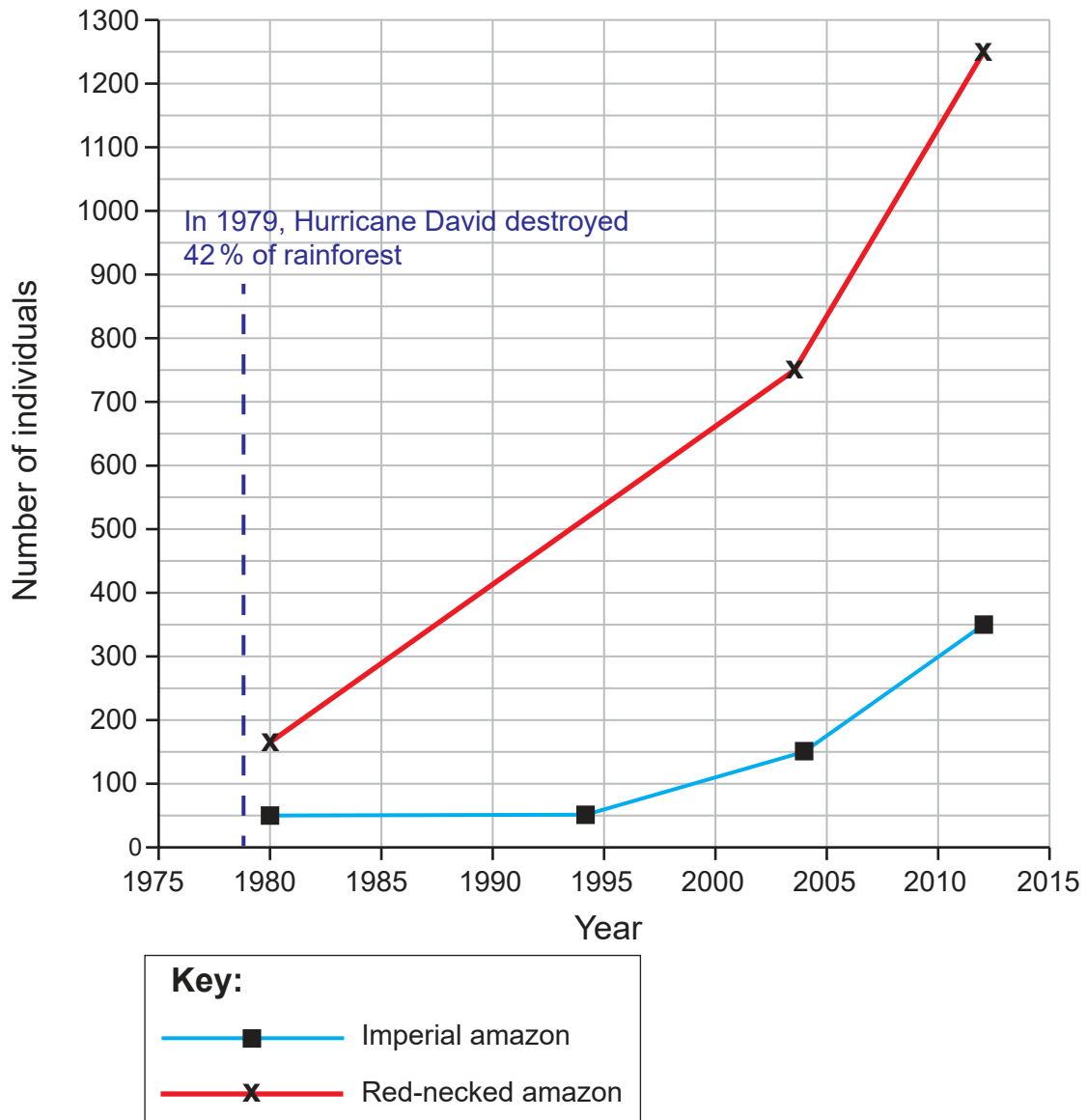


Figure 3(a): Hurricane history of Dominica since 1900

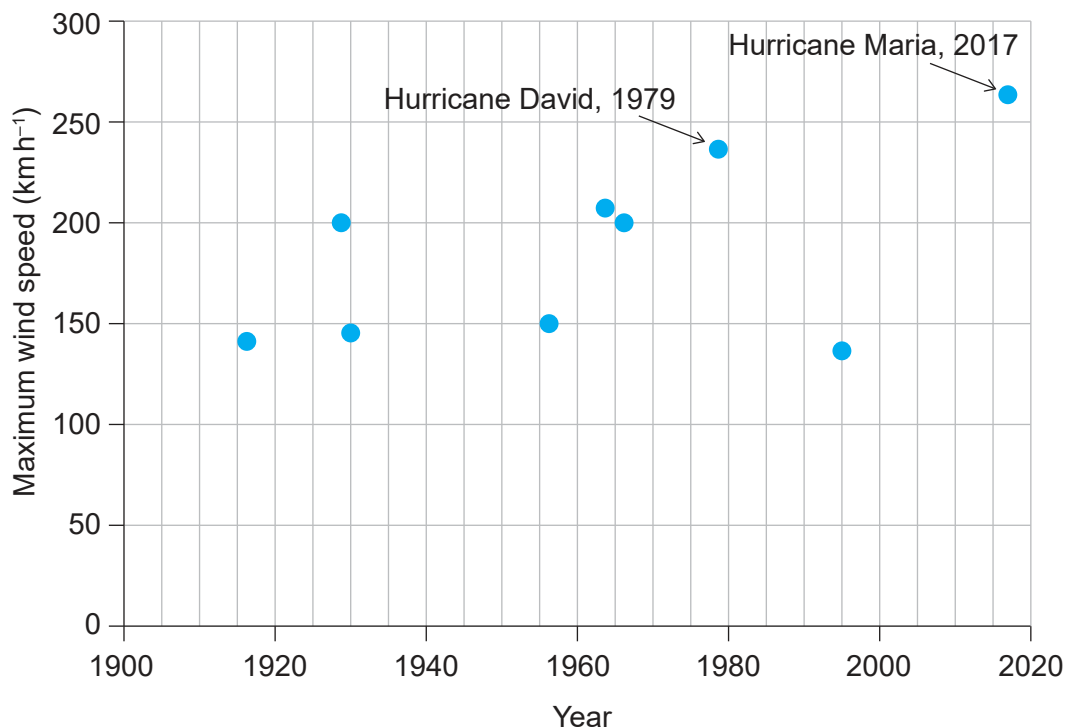
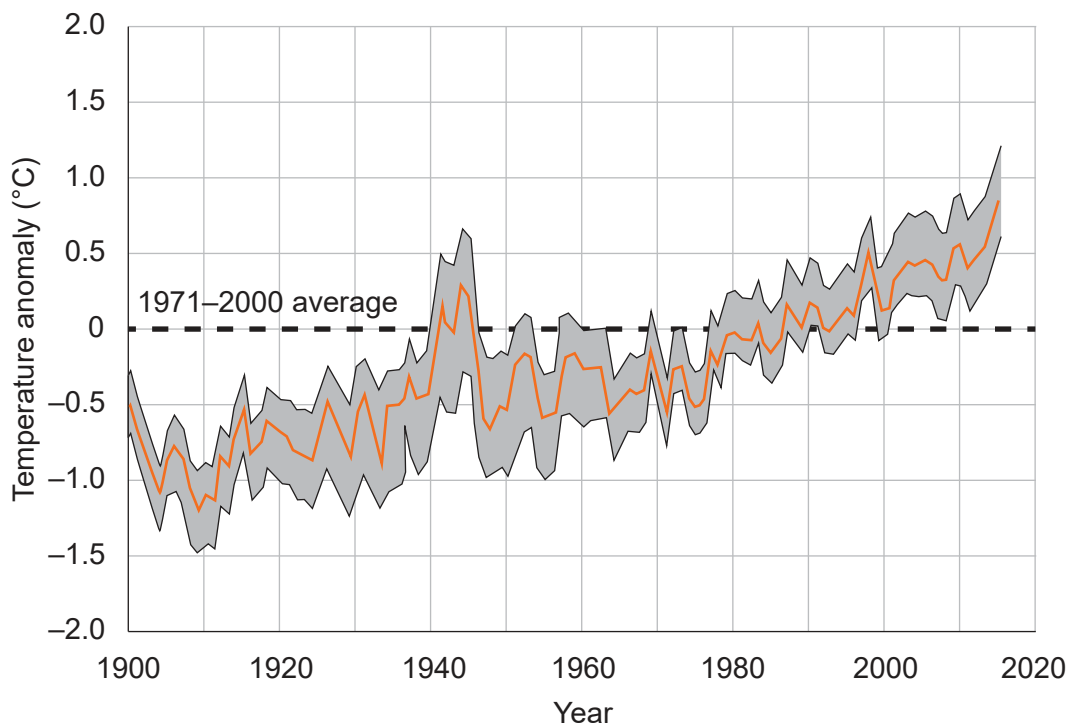


Figure 3(b): Average global sea surface temperature, 1900-2015



Key:

- Average global sea surface temperature (°C)
- Uncertainty in sea surface temperature readings (°C)

Figure 3(c): Impacts of Hurricane Maria

- 100% of food crops were destroyed.
- 90% of housing was damaged.
- Almost 10 000 landslides occurred.
- Extreme damage to tropical rainforest: all leaves removed from trees and large numbers of trees knocked down.
- Major damage to coral reef systems caused by waves and soil erosion from the island.
- Contamination of freshwater by oil spills and chemicals.



Damage caused by Hurricane Maria

Figure 3(d): Landslide caused by heavy rains after a hurricane



Turn over

Figure 4(a): Population pyramid for Dominica, 2018

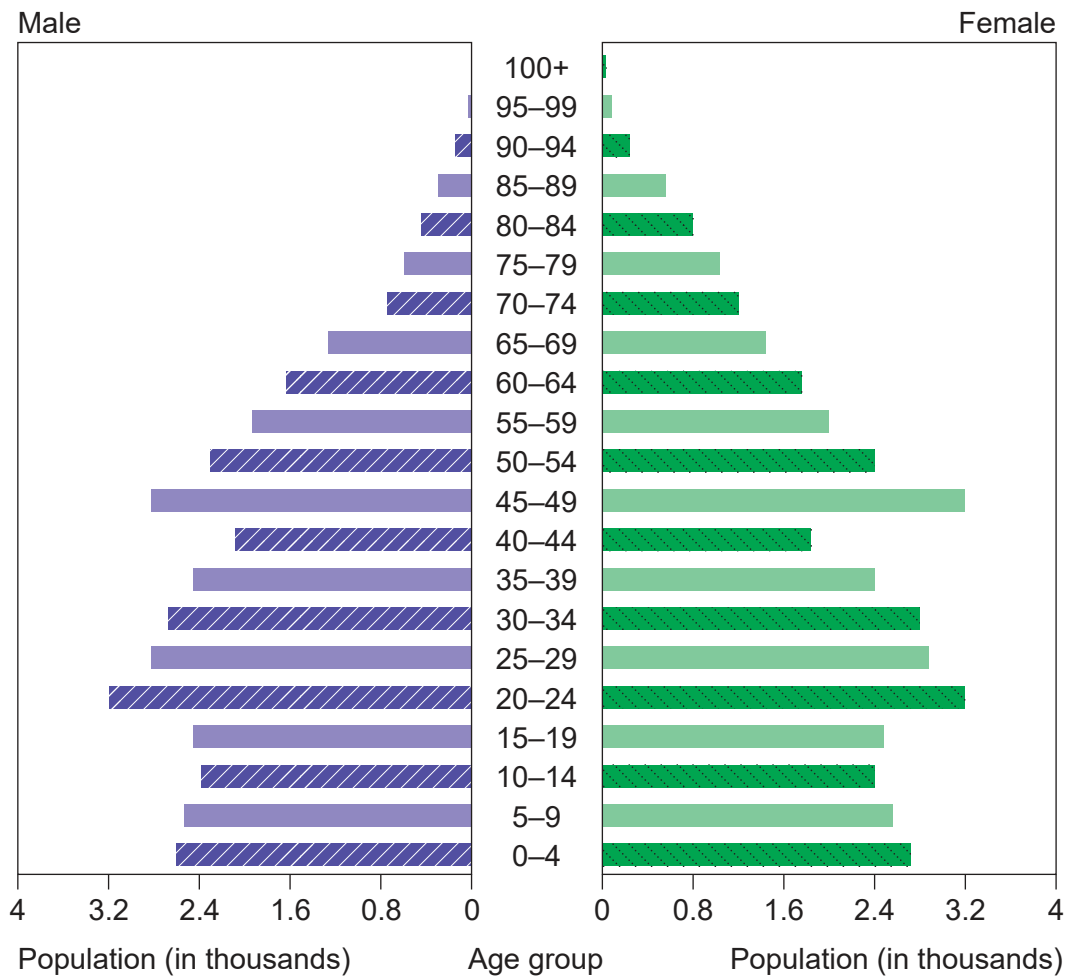


Figure 4(b): Population statistics for Dominica, 2017

Birth rate	15.1 per 1000
Death rate	7.9 per 1000
Net migration rate	-5.4 per 1000
Median age	33.5 years
Urban population	70.5 %
Total fertility rate	2.03 children per woman

Figure 5: “Building back better”



Dominica is focusing on a “Building back better” programme of recovery after Hurricane Maria to:

- become the world’s first climate-resilient nation
- conduct disaster risk assessment before reconstruction
- build hurricane-proof buildings
- build using local skills and resources
- focus on community participation in reconstruction
- plant fast-growing crops, such as lettuce and Chinese cabbage
- focus on root crops, such as sweet potatoes and ginger
- plant heat-tolerant varieties of foods
- keep farm animals in air-conditioned buildings.

References:

Figure 1(a) © International Baccalaureate Organization 2020.

Figure 1(c) [map] © International Baccalaureate Organization 2020.

[forest types diagram] *The Dominica Story: A History of the Island*. Lennox Honeychurch ©1995
Macmillan Education. Reproduced with permission of the Licensor through PLSclear.

Figure 1(d) Adapted from World Weather & Climate Information, Climate and Average Monthly Weather in Roseau, Dominica. Available at <https://weather-and-climate.com/average-monthly-Rainfall-Temperature-Sunshine,roseau,Dominica>.

Figure 2(a) © International Baccalaureate Organization 2020.

Figure 2(b) Paul R. Reillo, Ph.D., President, Rare Species Conservatory Foundation, Director, Tropical Conservation Institute, Research Professor, Institute of the Environment, Florida International University.

Data from World Parrot Trust, 2019. <https://www.parrots.org/projects/red-necked-amazon>.

ACTP. *ACTP responds to the commentary concerning conservation measures required for the endangered Amazon parrots of the Commonwealth of Dominica*. 2018 Available at:
<https://www.act-parrots.org/wp-content/uploads/2018/04/Dominica-Statement.pdf>.

Figure 3(a) Adapted from Dominica's history with tropical storms. Available at: <http://www.hurricanecity.com/city/dominica.htm>.

Figure 3(b) NOAA.

Figure 3(c) [text] Adapted from ACAPS, 2018. Dominica: The impact of Hurricane Maria. Available at:
https://www.acaps.org/sites/acaps/files/products/files/20180131_acaps_disaster_profile_dominica_v2.pdf.

[left image] Photo credit: Marica Honeychurch.

[right image] Photo courtesy of CARICOM, September 21, 2017,
<https://caricom.org/carpha-ready-to-assist-dominica/>.

Figure 3(d) Photo courtesy of Jodie Dangleben.

Figure 4(a) CIA, 2018. *The World Factbook: Dominica*. Available at: <https://www.cia.gov/library/publications/the-world-factbook/geos/do.html>.

Figure 5 [image] Gemma Handy.

[text] United Nations Development Programme - UNDP Barbados & the Eastern Caribbean.