

Teaching Program Year 11 Geography
HSC Course: 8.3.1 Ecosystems at Risk: Caves

Topic Outline	H12	Outcomes and Content
1-2. Introduction and location a. world location map b. tables of longest and deepest caves c. map of new South Wales d. vertical air photo of Yarrangobilly e. topographic map of Yarrangobilly f. photographs of Yarrangobilly	H1 H2 H10	<ul style="list-style-type: none"> describe world location, latitude, size shape and continuity of caves areas interpret topographic map and air photo of yarrangobilly describe landform from map, air photo and photos
3. Climate a. temperature graph for Kiandra and Yarrangobilly b. read meteorological instruments: anemometer, wet/dry bulb and light meter for 3 cave ecosystems	H1 H2 H9 H10 H11	<ul style="list-style-type: none"> interpret temperature graphs calculate average wind speed and humidity from instruments describe the relationship between climate and location in a cave explain key climatic processes which impact on the fragile alpine ecosystem
4. Landform a. cave development b. soil pH c. speleothem formation d. features of karst catchments	H1 H10	<ul style="list-style-type: none"> explain the relationship between geology and landform explain chemical weathering of limestone explain the chemical deposition of limestone and the caves formations which result interpret a topographic map of a karst landscape and recognise the main features construct a transect from a topographic map calculate gradient of a slope
5. Ecology a. features of the three main cave ecosystems b. cave food chains and biomass c. adaptations of cave animals	H1 H10	<ul style="list-style-type: none"> explain the relationship between location within a cave and biomass explain why biomass and energy pyramids are useful explain the relationship between animal adaptations and cave environment
7. Animals and food webs a. adaptations of animals to cave env. b. energy and biomass pyramids c. impact of change	H2 H10 H11	<ul style="list-style-type: none"> explain how different animals have adapted to the natural stress of the alpine environment construct simple food chains explain that different ecosystems can be compared with biomass/energy pyramids explain that the flow of energy is a limiting factor for the productivity of alpine

		<p>ecosystems</p> <ul style="list-style-type: none"> • explain why cave animals are unable to survive even minor changes to cave environment
<p>7. Human Impacts</p> <p>a. on catchments</p> <p>b. in caves</p>	<p>H2</p> <p>H6</p> <p>H10</p>	<ul style="list-style-type: none"> • explain the relationship between water flow in catchments and caves beneath • draw a precis map of human changes to the Yarrangobilly area from a vertical air photo • describe visitor impact to caves including energy flows and nutrient cycling
<p>8. Management</p> <p>a. values</p> <p>b. scales of management: state and local</p> <p>c. catchment management</p> <p>d. cave management</p> <p>e. management scenario</p>	<p>H2</p> <p>H5</p> <p>H6</p> <p>H9</p> <p>H10</p> <p>H13</p>	<ul style="list-style-type: none"> • explain why it is necessary to consider caves when managing catchments • describe cave management policies and methods • develop a management plan for a karst area • evaluation of contemporary cave management strategies • explain the importance of understanding key biophysical processes in caves for effective management