Active learning in Five Islands Provincial Park about dinosaurs, glaciers, and climate change

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The Triassic and Jurassic rocks of Five Islands Provincial Park, 50 km west of Truro, Nova Scotia, offer an unparalleled opportunity to engage the public in geoscience explorations. This location was chosen because it presented spectacular scenery and important geological associations in the site of a former rift valley. A typical walk comprises an audience of 40 to 80 people of all ages, who begin their journey into the past gathered in a semi-circle for an active learning talk about Earth history. Participants are invited to represent important 'paleomilestones' such as the colour red (enough oxygen), complex animals, Fundy rift valley formation, dinosaurs, flowering plants, humans, and the present. We move to the beach to clearly see the sedimentary and volcanic rocks, glacial till, and stratified outwash material. The rocks help us renew the discussion about dinosaurs, fish, and climate variations using sedimentary structures and rock types, rift valley formation, volcanic eruptions, and ancient paleogeography. The audience then walks into the virtual past along the shore. For the present and near past, climate change varies from tundra to present day biomes; the audience examines the variety of rocks on the beach to explore deeper into glacial history. Bedrock provides the chance to talk about the implications of geoscience knowledge for geotechnical applications. The Jurassic sedimentary rocks show examples of seasonal river systems and their architecture. By this point in the walk, the audience is recognizing channels, point bars, and overbank deposits. An exposed fault that separates the sandstones and basalt is used to discuss fault movements, timing of movements, and risk management in geoscience. The basalt outcrop and feeder dyke offer an opportunity to describe large igneous provinces and their effect on life. At the oldest Mesozoic sedimentary rocks, the Triassic (225 Ma) formations contain fossils that are not found in the Jurassic (200 Ma) sedimentary rocks previously encountered, indicating that a major extinction (43%) occurred at this time. Now the audience can actively talk about extinction events, dinosaurs, and life on Earth. Throughout the walk, the group's confidence in using geological terms, making observations, expressing ideas, and discussing implications of their new-found knowledge increases. Choosing a location characterized by great scenery, good outcrops, and a "worthwhile story" usually ensures a successful walk. Encouraging dialogue, questions, and discussion involves the audience in active learning and provides 'ah-ha' moments. These possibilities may give individuals the impetus to become involved in geoscience as citizen scientists.

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