

Human Health and Well-being Outcomes of Pinery Provincial Park Environments

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The Full Benefits of Protected Areas are Seldom Recognized

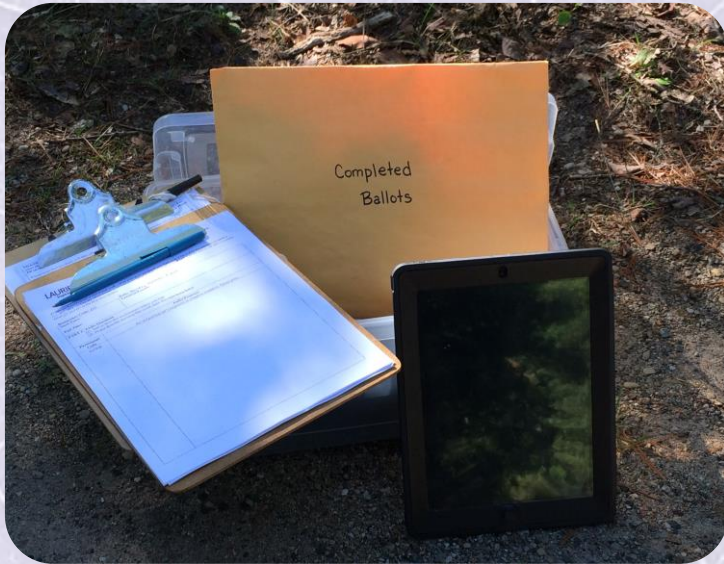
- There is compelling evidence that “contact with nature” can:
 - Be restorative/therapeutic (decrease tension, depression, confusion, anger, increase energy)
 - Increase frequency & duration of physical activity
 - Aid in recovery from surgery
 - Be a coping tool for ADD/ADHD
- People have a more **positive outlook on life** and **higher life satisfaction** when in close proximity to nature
- Quality of the environment may be an important element in enhancing well-being (restorative, naturalness, biodiversity)

More research is needed on the role different environment types have in influencing health & well-being.

Research Questions

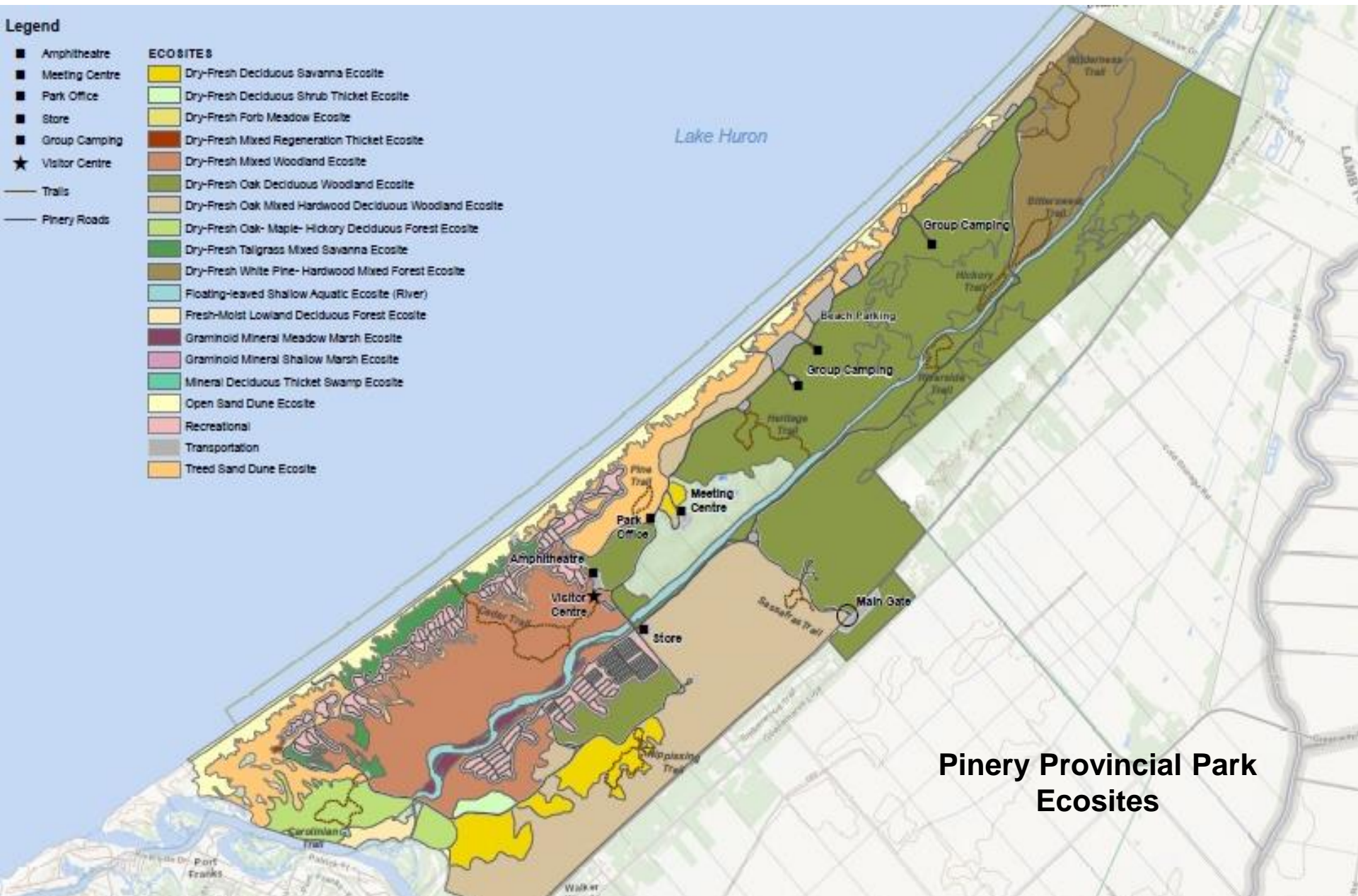
1. What are the human health and well-being outcomes perceived by visitors whilst actually experiencing different environments within the park?
2. What are the variations in health and well-being outcomes by socio-demographic and overall health factors such as age, gender and self-reported physical and mental health?
3. What influence does perceived ecological integrity, naturalness and biodiversity of environments have on visitor experience and health and well-being outcomes?
4. What is the influence of dosage on visitor experience and health and well-being outcomes?

Methods



- *In-situ* surveying of park visitors at intercept points, including trails, beaches, campgrounds and visitor centre
- Tablet computers and oral responses transcribed
- Sampling was systematically distributed across month, week and time of day
- Attempts were made to get an equal sample of all locations

Study Sites



Visitor Centre



Burley Campground



Riverside Trail



Day Use Beach



Demographics



Sample size (n=467); 86% response rate

- Higher proportion of females (60%)
- Average age = 44
- 79% employed
- 53% education below bachelor's level
- 89% Ontario residents
- 70% returning visitors
- Average length of stay = 2-3 days

Demographics



- 93% reported good → excellent mental health
- 89% reported good → excellent physical health
- 78% “stressed” in the week prior to visit
- 75% feel visits to natural areas *very important* for improving aspects of health and well-being

Restorative Outcomes Scale (ROS)

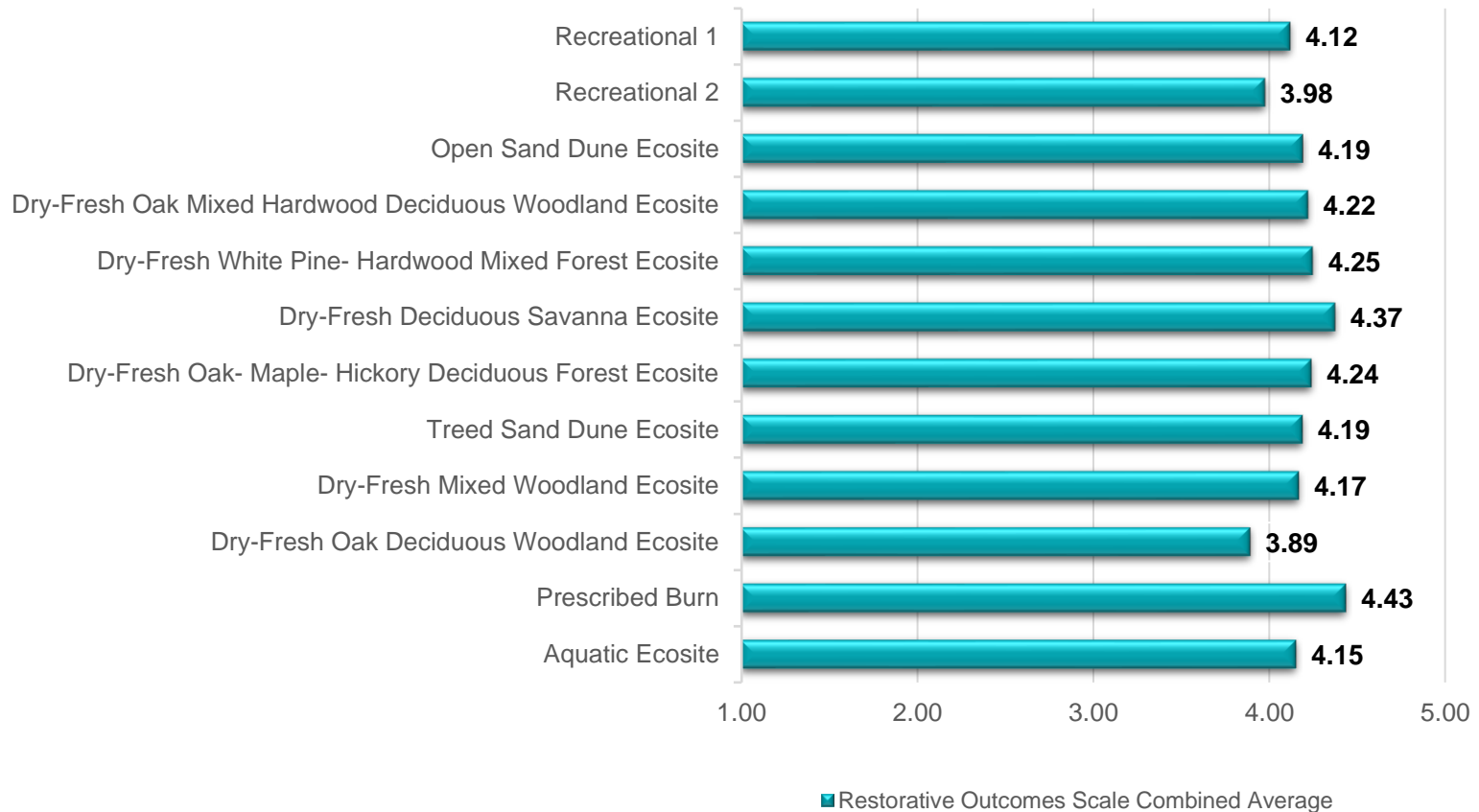
- Measuring self-reported well-being and mood in the environment:

Please rate your agreement with the following statements, comparing how you feel in this environment versus other areas of the park.

	Disagree Strongly	Disagree a Little	Neither Disagree or Agree	Agree a Little	Agree Strongly
I feel calmer here.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel restored and relaxed here.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel enthusiastic and energetic here.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My concentration and alertness clearly increases here.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I forget everyday worries here.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My thoughts are clearer and clarified here.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

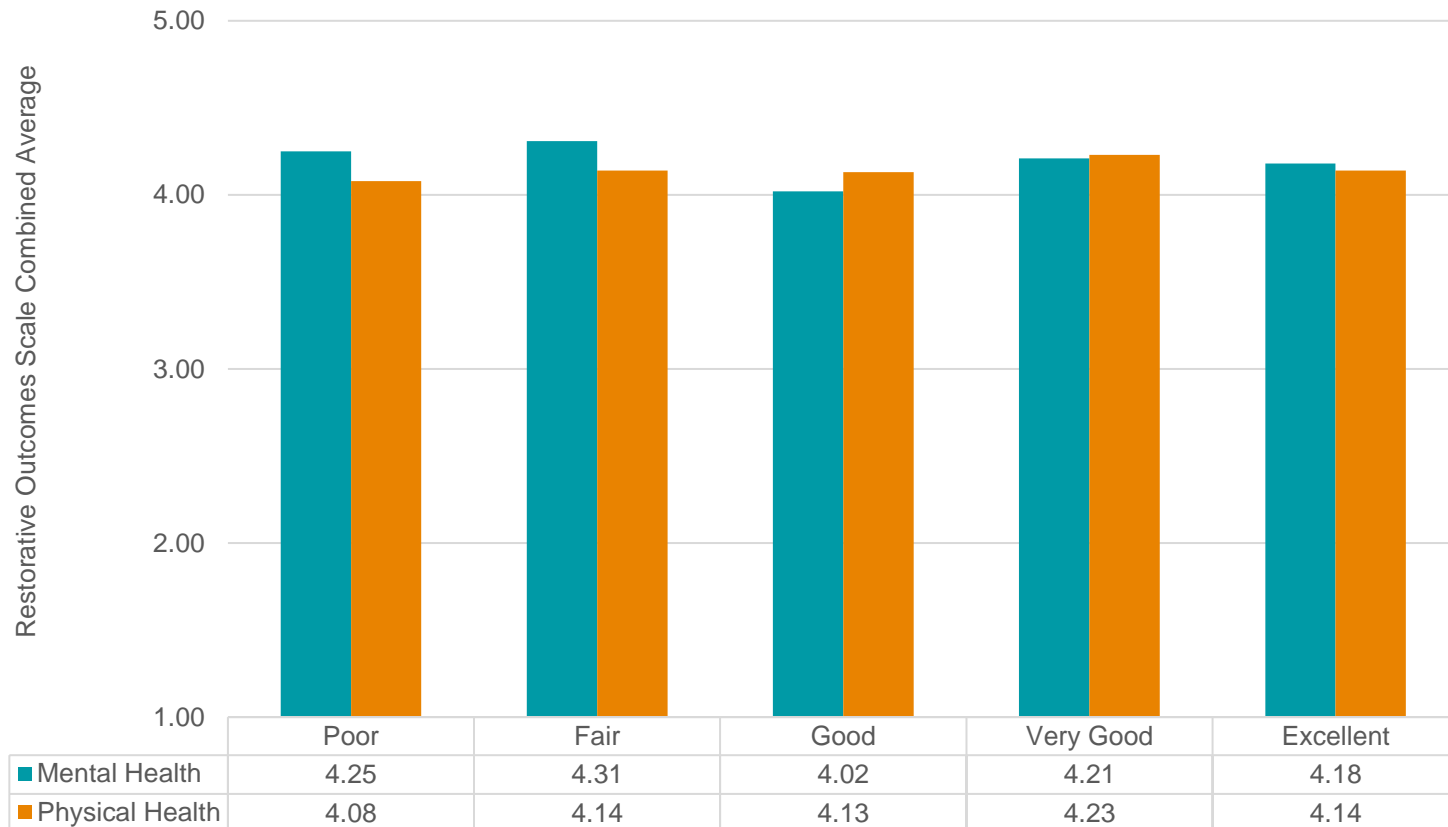
ROS by Location

Average Self-Reported Restorative Outcomes by Ecosite (Location)



ROS & Health Factors

Relationship between Restorative Outcomes and Self-Reported Health Factors



ROS by Gender



= 4.06



= 4.24

- Females reported higher perceived restorative outcomes
- Females receive greater outcomes:
 - *“My concentration and alertness clearly increase here.”*
 - *“My thoughts are clearer and clarified here.”*

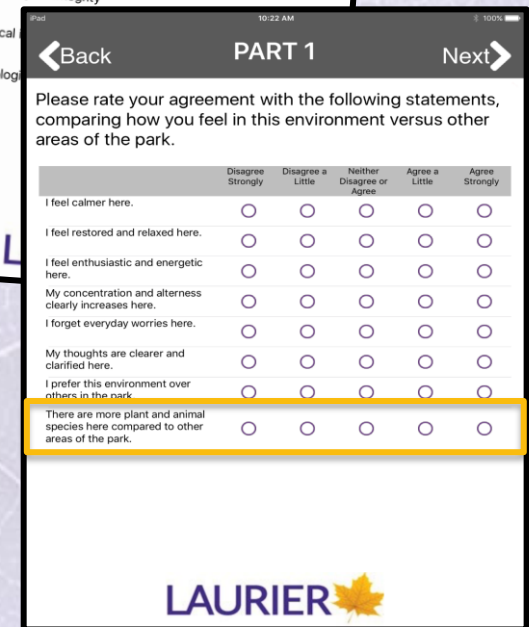
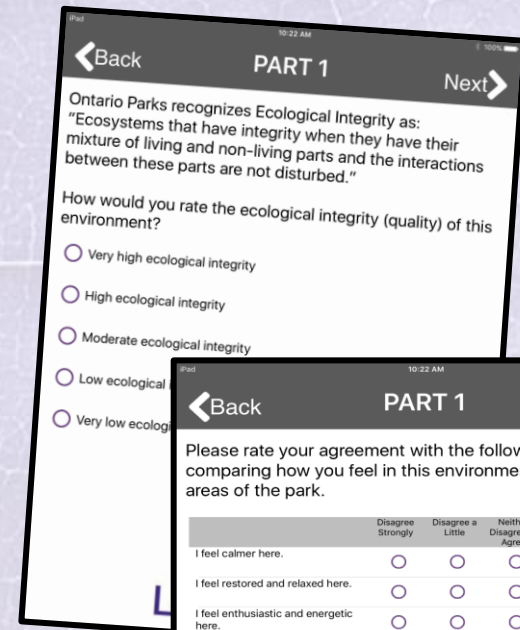
Restorative Outcomes Scale Combined
Average by Gender

Perceptions of Environment

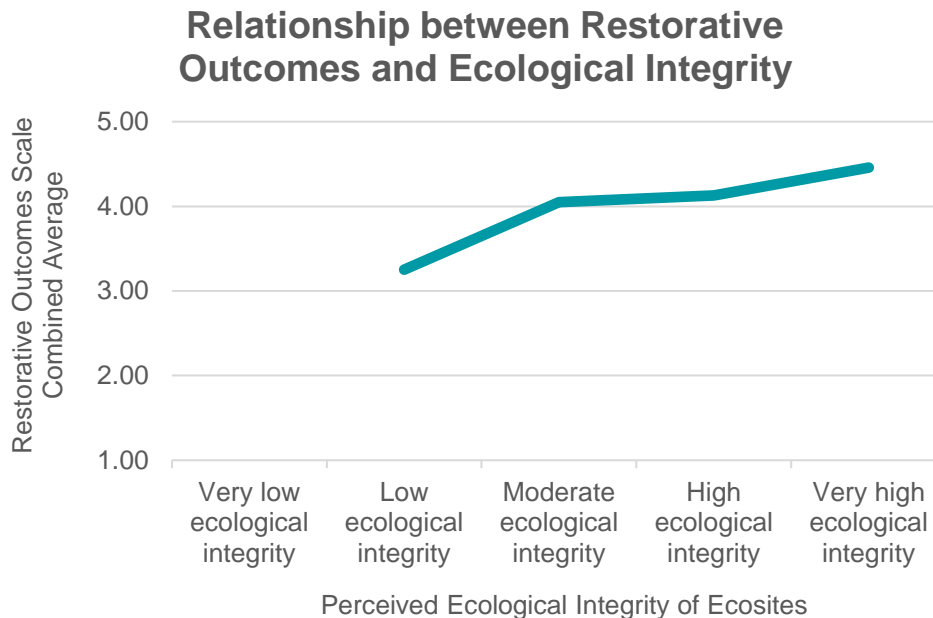
Ecological Integrity (EI):

Ecosystems that have integrity when they have their mixture of living and non-living parts and the interactions between these parts are not disturbed (by human activity).

Species Diversity (SD): The variety of species found in a given region or habitat.

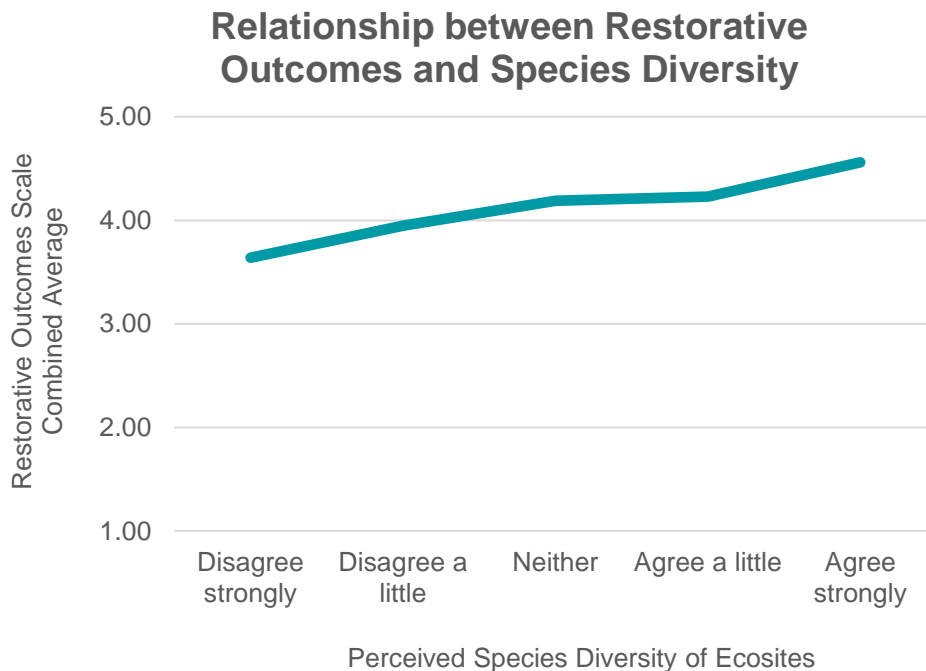


ROS & Ecological Integrity (EI)



- As EI rating ↑, ROS rating ↑
- Significant differences:
 - “low”
 - “moderate” to “high”
 - “very high”
- No ratings of “very low ecological integrity”

ROS & Species Diversity (SD)



- Follows similar trend to EI
- As SD rating ↑, ROS rating ↑
- Significant differences:
 - *“disagree strongly” to “disagree a little”*
 - *“neither” to “agree a little”*
 - *“agree strongly”*

	Component		
	1	2	3
What is your gender?		0.429	0.466
In general, how would you rate your mental health?	0.642	-0.466	
In general, how would you rate your physical health?	0.622	-0.42	0.354
Rate the amount of stress in your life over the 7 days prior to your visit	-0.371	0.426	
How would you rate the naturalness of this environment?	0.468	0.403	-0.472
Please rate the ecological integrity (quality) of this environment	0.567	0.314	-0.453
How important are visits to natural areas to improving various aspects of your health and well-being?	0.316	0.321	0.611
Restorative Outcomes Scale	0.441	0.613	

EXPLORATORY FACTOR ANALYSIS (PCA)

Useful for identifying and understanding segments of the visitor population.

Component 1 (22%): in good mental/physical health, moderate stress levels prior to visit, **moderately high perceived EI, naturalness, ROS**

Component 2 (19%): females, **poor reported physical/mental health**, moderate perceived stress, **EI, naturalness, ROS**

Component 3 (15%): females, moderately positive reported physical health, low perceived EI/naturalness

COMPONENTS 1 & 2 generally consistent with findings from Alberta provincial parks survey of >1,500 visitors (2013, 2014)

Insights

HIGH RESTORATIVE OUTCOMES

- Environment has little influence
- Length of stay (dosage) has little effect
- Females receive greater benefits
- Irrespective of mental/physical health
- Influenced by perceived state of environment (*ecological integrity & species diversity*)



Planning & Management

- Adaptive management
- Balance between ecological integrity and visitor experience
 - Allowable activities
 - Zoning
 - Dynamic day-use management
- Marketing to target audiences
- Education, interpretation and outreach



Thank You!

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Pinery Provincial Park Staff