LAKE HURON CENTRE FOR COASTAL CONSERVATION

Beach Conservation

The Trouble with Beach Grooming

Introduction

Some conventional beach management practices that include mechanized raking or grooming the beach can be destructive and have long-range implications for the sustainability of the beach-dune system.

Some beaches which have a fine-grained, low gradient beach are often high in moisture content (particularly during periods of high lake levels). Raking has the effect of aerating the sand and drying it out, thus making the fine sands vulnerable to wind erosion. Raking and grading also tend to obliterate sand binding beach vegetation which tends to populate the mid and upper beach. This undermines the critical relationship between lake levels and dune development.

During low lake levels, dune vegetation (Marram grass in particular) will migrate lakeward through its underground rhizome systems and colonizing areas of the upper beach. The extent of this colonization is confined by high lake levels and storm events.

The practice of beach grooming can have profound long-term negative effects on beach erosion and shore ecology. Along many parts of the Lake Huron coastline, particularly north of Point Clark (including southern Georgian Bay and the south shore of Manitoulin Is.), beach and dunes are considered geologic relics—sand deposits which were deposited centuries ago when the coastal geologic conditions were much different than today. The beach

and dunes should be regarded as a non-renewable resource that must be conserved in order to maintain this natural resource. That means understanding the natural coastal processes at work, and ensuring that our interactions with the beach-dune system do not compromise beach quality or quantity.

The process of beach grooming, which has been done at a number of beaches for aesthetic purposes, can make the erosion problem worse such that sand is lost from the dune system, interrupting the dune cycle. Sand blown beyond the foredune (or 'first dune') represents a permanent loss to the system.

Raking has three key negative consequences:

First, the typically wet sand is drawn up and aerated, contributing to drying out of the sand and making the fine sands more vulnerable to wind erosion. High winds can transport fine sands a considerable distance inland.

Second, raking can destroy new seedlings establishing at the leading edge of the dune. Although seedlings in this 'embryo' dune, or pioneer zone, often become buried by wind-blown sand or storm-deposited sand, they will usually grow through the new sand layer and continue to stabilize the area. In addition, these upper beach and foredune vegetation colonies expand lakeward during lower lake levels. Conversely, these colonies contract during high lake levels and storm events as wave erosion removes and redistributes the foredune plants.

Third, the beach ecosystem is a habitat and feeding grounds for a mosaic of wildlife, including shore-birds, invertebrates, terrestrial insects and vegetation. Raking with heavy machinery can have a detrimental impact on species and habitat. More subtly, beach raking removes organic debris that washes up on the beach forming a strand line (sometimes referred to as wrack line). This organic detritus typically releases valuable nutrients into the beach substrate. These nutrients, in turn, are used by beach plants like Marram grass, Silverweed, and germinating seedlings of Sea Rocket and Pitchers Thistle. Preventing the nutrients from recycling can affect the integrity of the dune system over the long-term.

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Grooming can aerate the sand, drying it out. Dry sand is more prone to wind erosion

Grooming can damage dune vegetation that would ordinarily collect sand and prevent erosion. Preventing dune grass from growing lakeward during low lake levels means the dune will build vertically rather than horizontally.

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Excessive debris can be removed from the beach, however, it is the tendency to conduct regular scheduled raking that produces a sterile beach environment.

Aside from the ecological effects of raking, there are compelling economic reasons for reconsidering the practice of beach raking. Losses of sand from the beach-dune system represent a loss to the protective capacity of the beach-dune system during high lake levels and storm events. While losses may not appear significant on a *per annum* basis, over the long-term it can amount to substantial quantities of permanent sand loss. The value of a beach-dune system simply as shore protection has been estimated at about $3000 per linear metre. Beyond this, dunes provide a buffer for water filtering, and reduces maintenance costs by preventing sand drifting.

While grooming may "beautify" the beach, aggressive mechanized grooming removes significant amounts of wrack and sand and disturbs or destroys countless beach organisms as well as beach nesting habitat.

Other local jurisdictions with significant public use and similar beach characteristics, either have not embarked on a raking program (Pinery Park), or have strict guidelines around the practice (Huron-Kinloss; Sauble Beach). A number of American jurisdictions (e.g. Palm Beach County, Florida) have reevaluated their raking programs, based on their environmental impacts, and have radically scaled back their programs.

It is recommended that the beach managers consider implementing a beach cleaning program that is more environmentally appropriate. Large raking machines in current use could be replaced by beach clean-up staff walking the beaches and picking up litter manually. In some municipalities, staff is already assigned to clean up waterfront litter, particularly on busy summer days or weekends, and so this could be a logical extension. Other alternatives could include working with

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Strand line on beach.

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Endangered Piping Plovers foraging in beach strand material.

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local groups to develop an "Adopt-a-beach" program where volunteers look after a section of the waterfront.

Regularly scheduled beach grooming is indiscriminate, allowing for unnecessary raking to occur. There may be occasions when mechanical raking is considered unavoidable (e.g. excessive debris washing up on the beach, garbage accumulated after a holiday weekend), but generally it is unnecessary and can be harmful to the beach ecosystem. Municipalities should review what conditions constitute a need for raking and develop guidelines so that all field employees have a clear understanding of the limitations necessary on beach grooming.

What are some Options?

It's important to manage people's expectations. Do you really need to groom the beach? Some of the alternatives to regular grooming that would help to protect beach ecology include:

- no grooming,
- hand grooming,
- seasonal grooming, zonal or rotational grooming, and
- threshold grooming, or strand line removal beyond a certain density or height.

The old notion of the "pristine" beach, clear of nothing but sand, is one that fails to recognize the life that forms, or relies on, the beach ecosystem. Beaches are far from lifeless. Managing them as an ecosystem will restore some balance, where people's needs and the needs of the coastal environment occur in harmony.

Plants, like the endangered Pitcher's Thistle (left) and Sea Rocket (right) can occur on the upper or mid beach. The habitat and survival of these plants can be impacted by beach grooming.

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Funding for this publication was made possible through the federal Habitat Stewardship Program for Species at Risk.