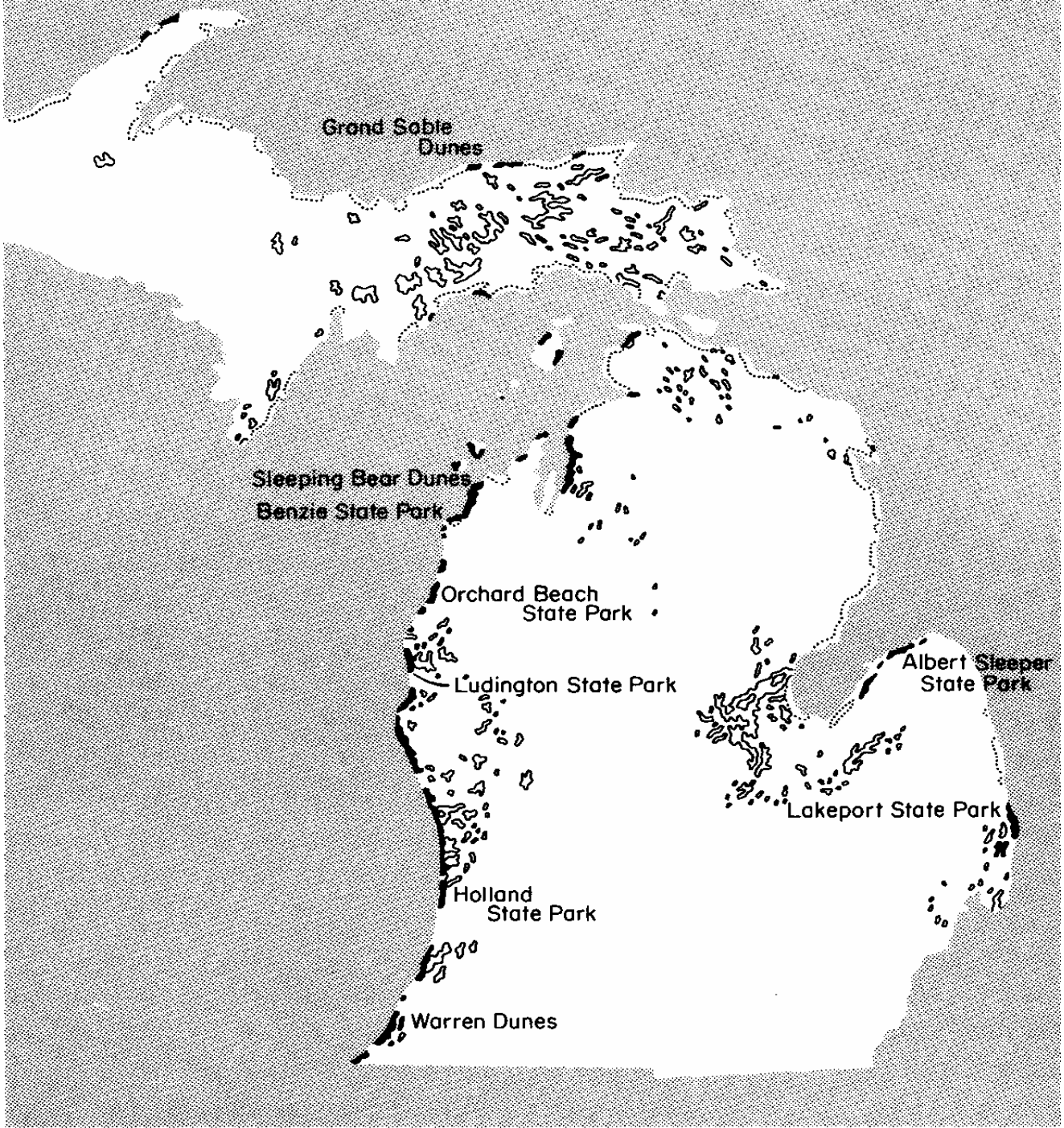
A Potential Classification System for Coastal Dunes Along Lake Michigan

Alan F. Arbogast
Department of Geography
Michigan State University

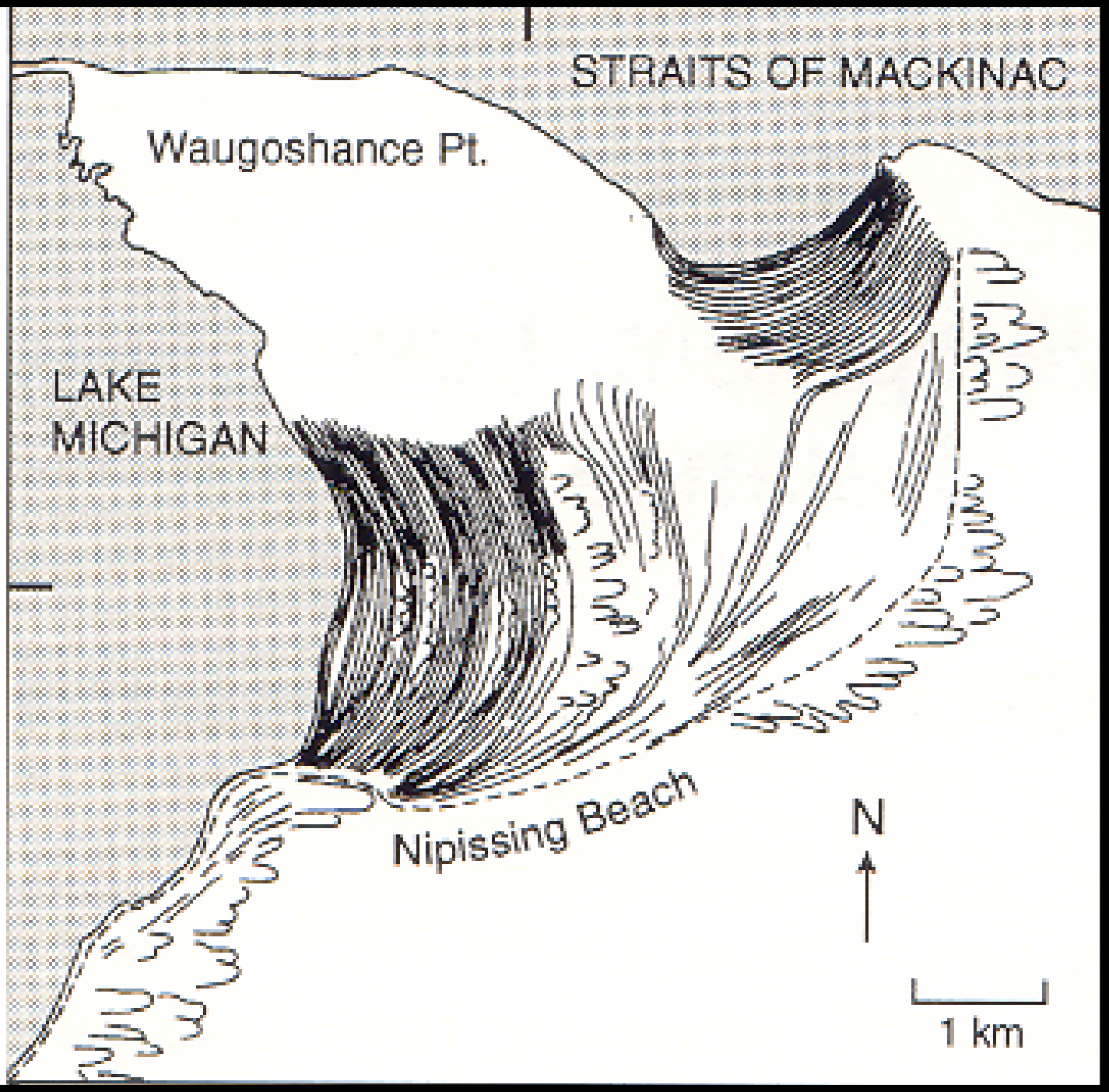


Dune fields in Michigan

(from Dorr & Eschman, pg. 202)

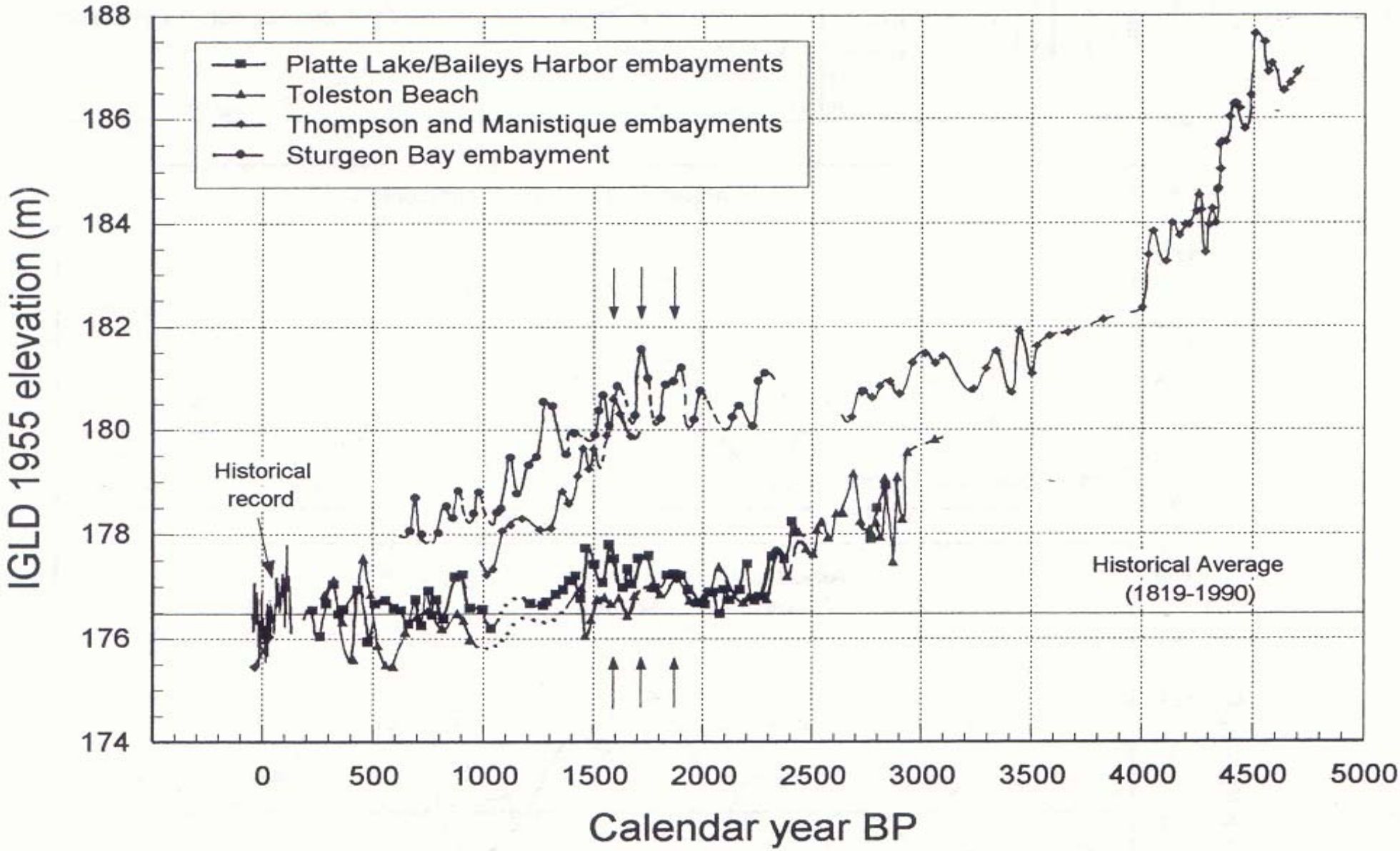

Prevailing Winds

Beach Ridge Sequences
in Wilderness State Park,
Northwest Lower Michigan
(from Lichter, 1995; pg. 182).



(from Maher Collection)

Baedke and Thompson, 2000




South Africa
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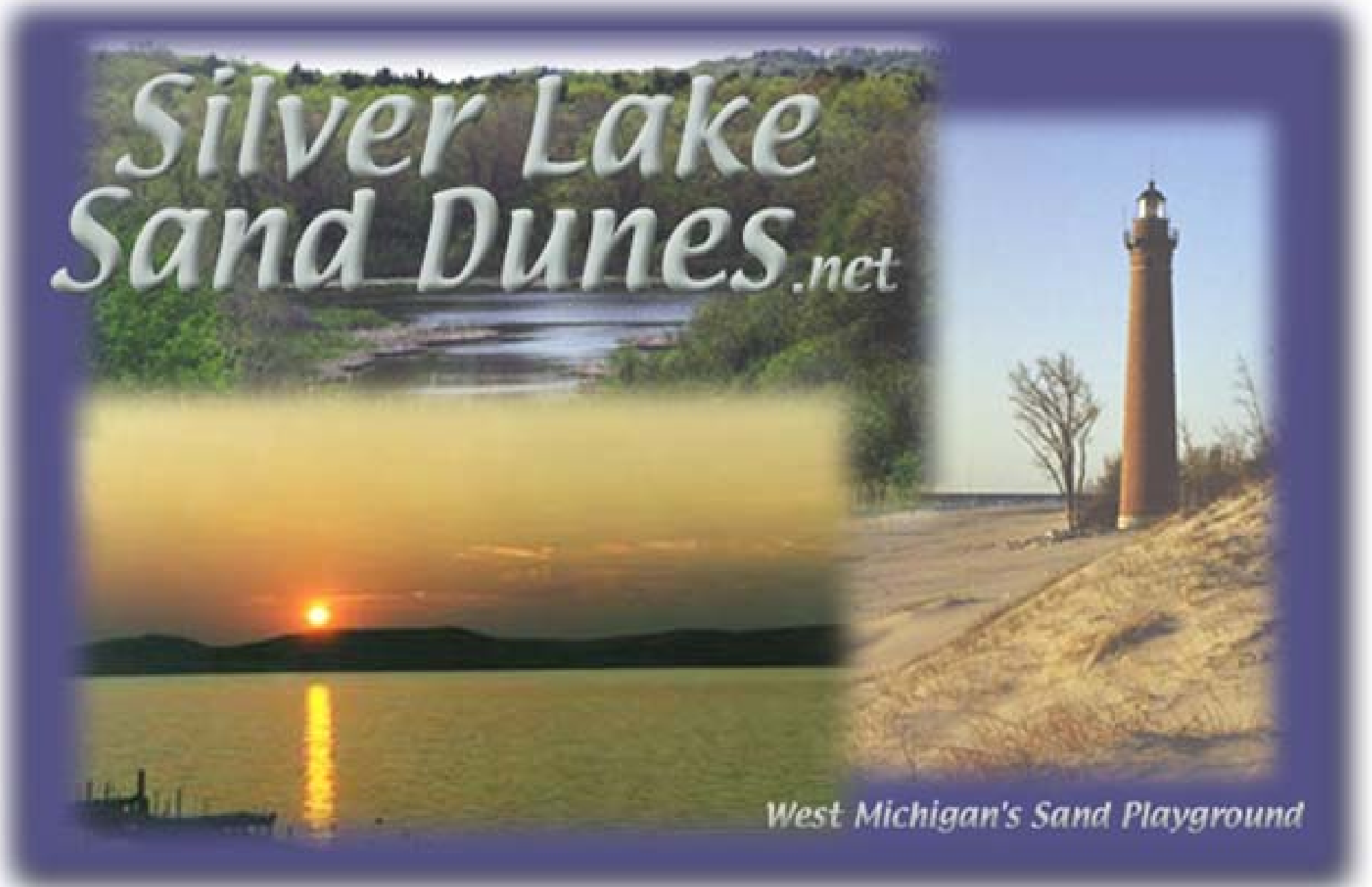
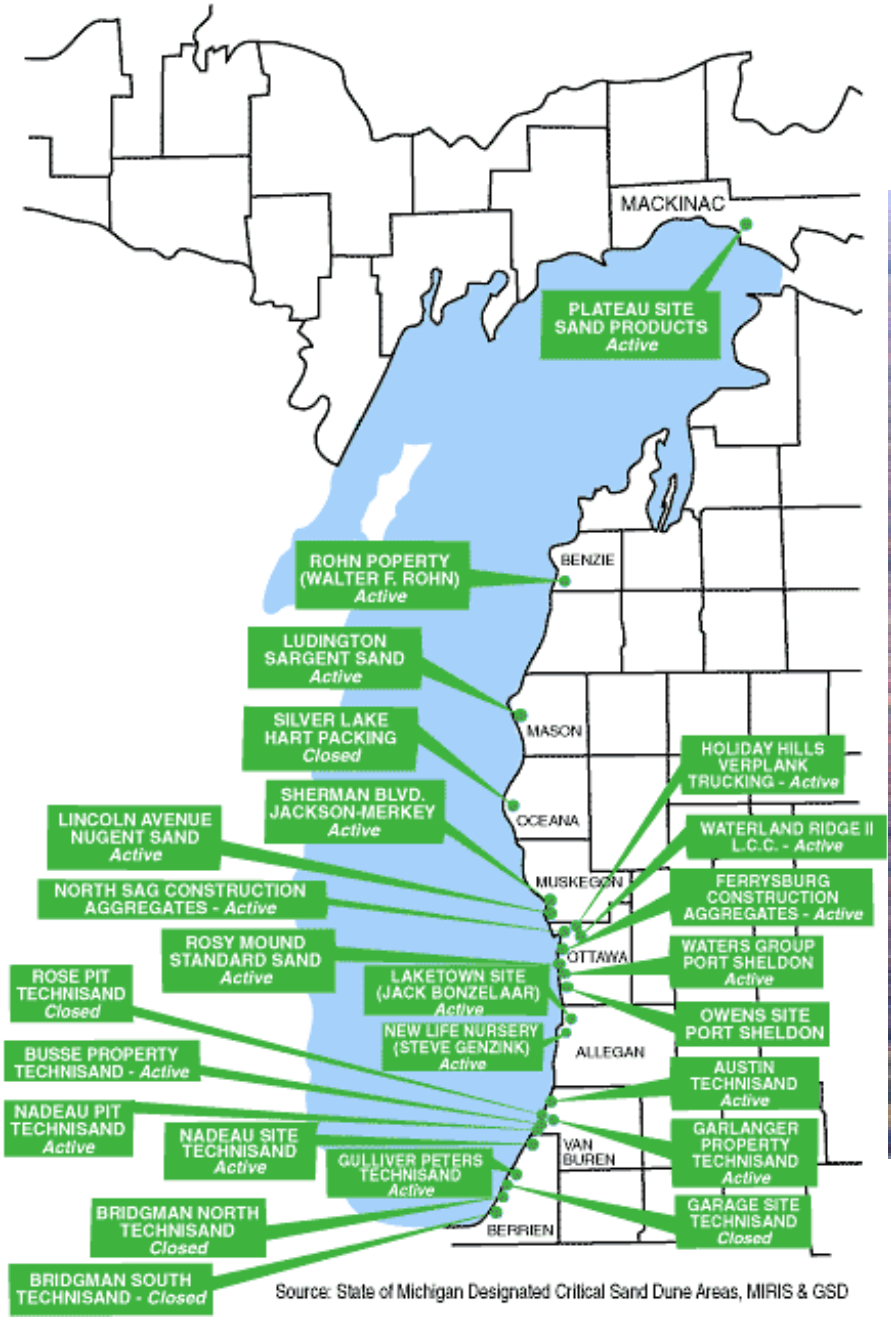
Southeastern Coast of Australia


North Island of New Zealand


Lake Michigan


1) westerly winds
3) Michigan's a big sand box
2) long fetch across Lake Michigan


Silver Lake
Sand Dunes.net
West Michigan's Sand Playground

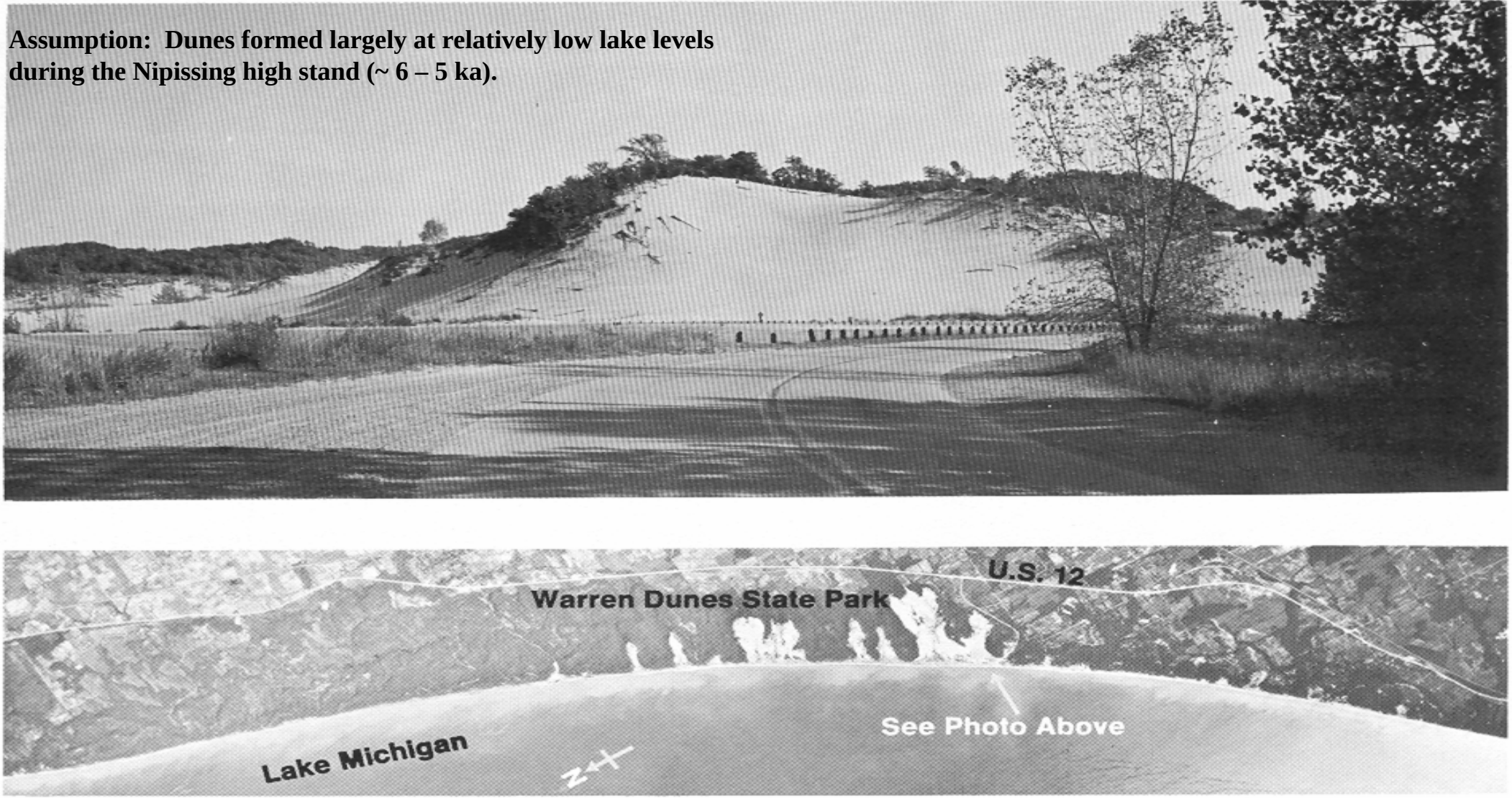


Source: State of Michigan Designated Critical Sand Dune Areas, MIRIS & GSD

Source: Preserve the Dunes, Inc
(http://www.daac.com/sosdunes/NPa2.html)

Previous Studies (e.g., Scott, 1942; Olson, 1958a, b, c; Dorr & Eschman, 1970; Buckler, 1979)

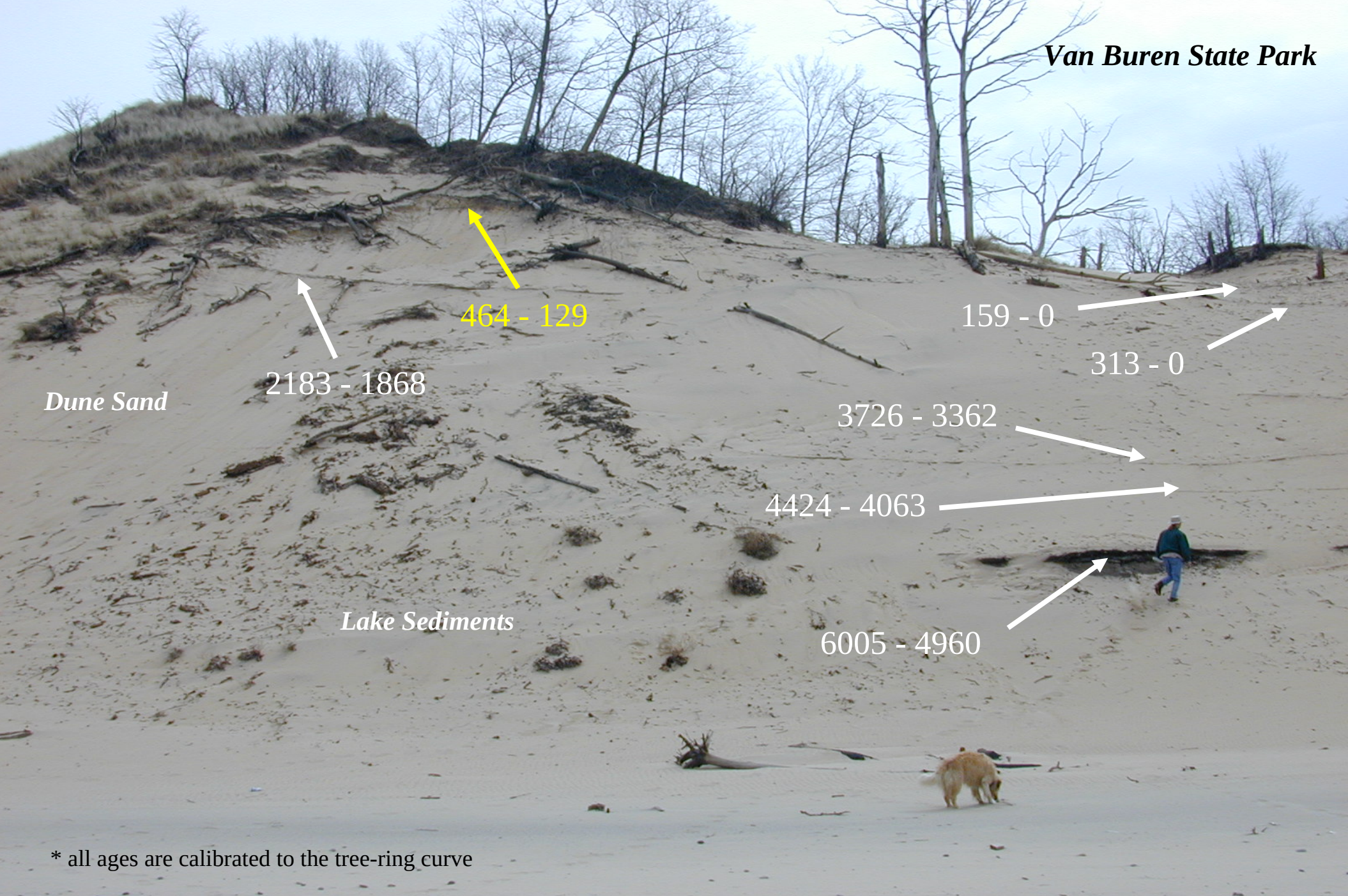
Assumption: Dunes formed largely at relatively low lake levels during the Nipissing high stand (~ 6 – 5 ka).



From Dorr & Eschman, 1970, pg. 201

Figure IX–19. "Blowouts" due to wind action on shoreward side of old "high dunes" related to higher water level of Glacial Lake Nipissing at Warren Dunes State Park (also see Fig. IX–24). Arrow on lower aerial photograph indicates location and direction of upper photograph. The older, high dunes for the most part are stabilized by vegetation, but blowouts form locally where vegetative cover is destroyed by fire, disease, or drought, or where wave or stream erosion at base of dune causes sliding. (Aerial photo from U.S. Department of Agriculture.)


Buried soil

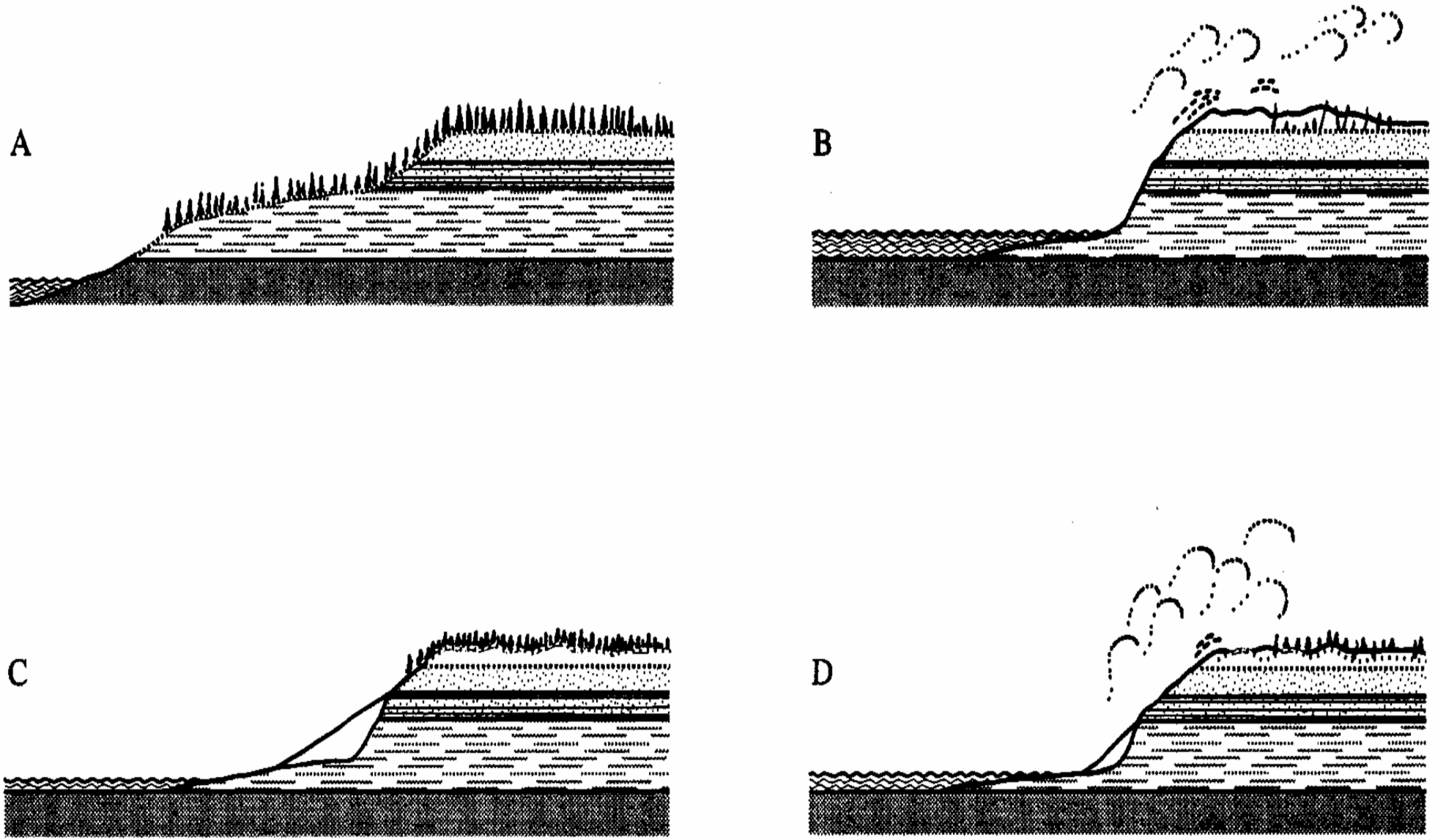


* all ages are calibrated to the tree-ring curve

Problems of Classification

Perched Dunes

The Perched Dune Model

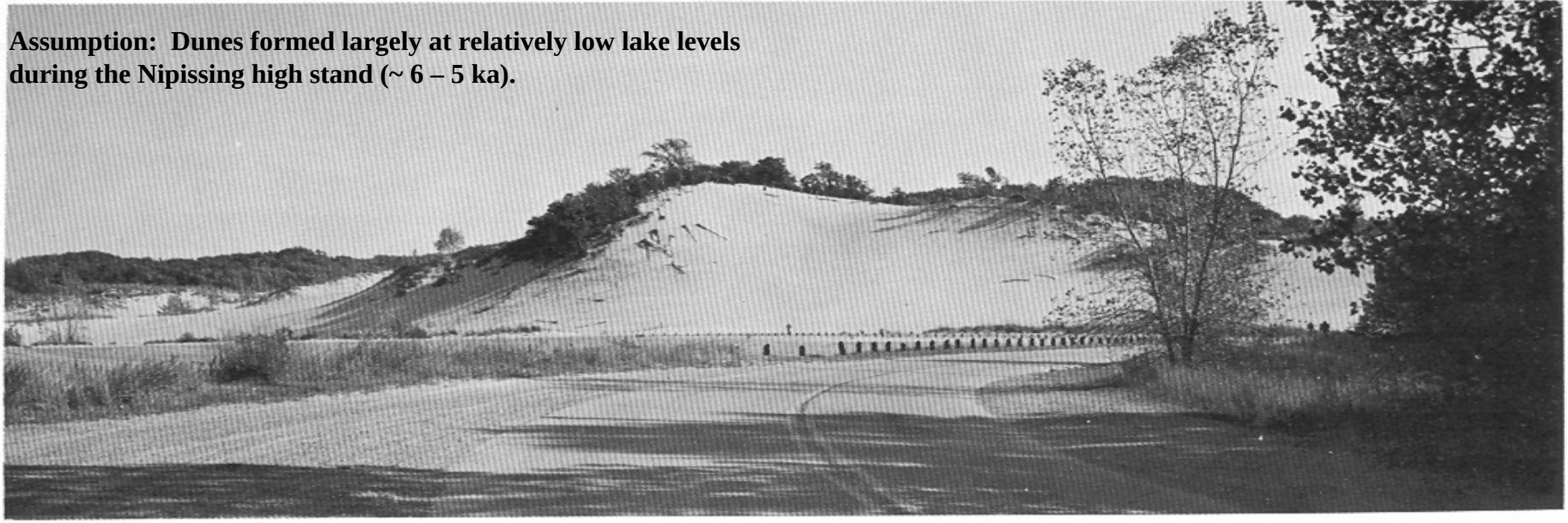


(from Anderton and Loope, 1995)


Hoffmaster State Park

Secondary Dunes
(Scott, 1942)

Assumption: Dunes formed largely at relatively low lake levels during the Nipissing high stand (~ 6 – 5 ka).



From Dorr & Eschman, 1970, pg. 201

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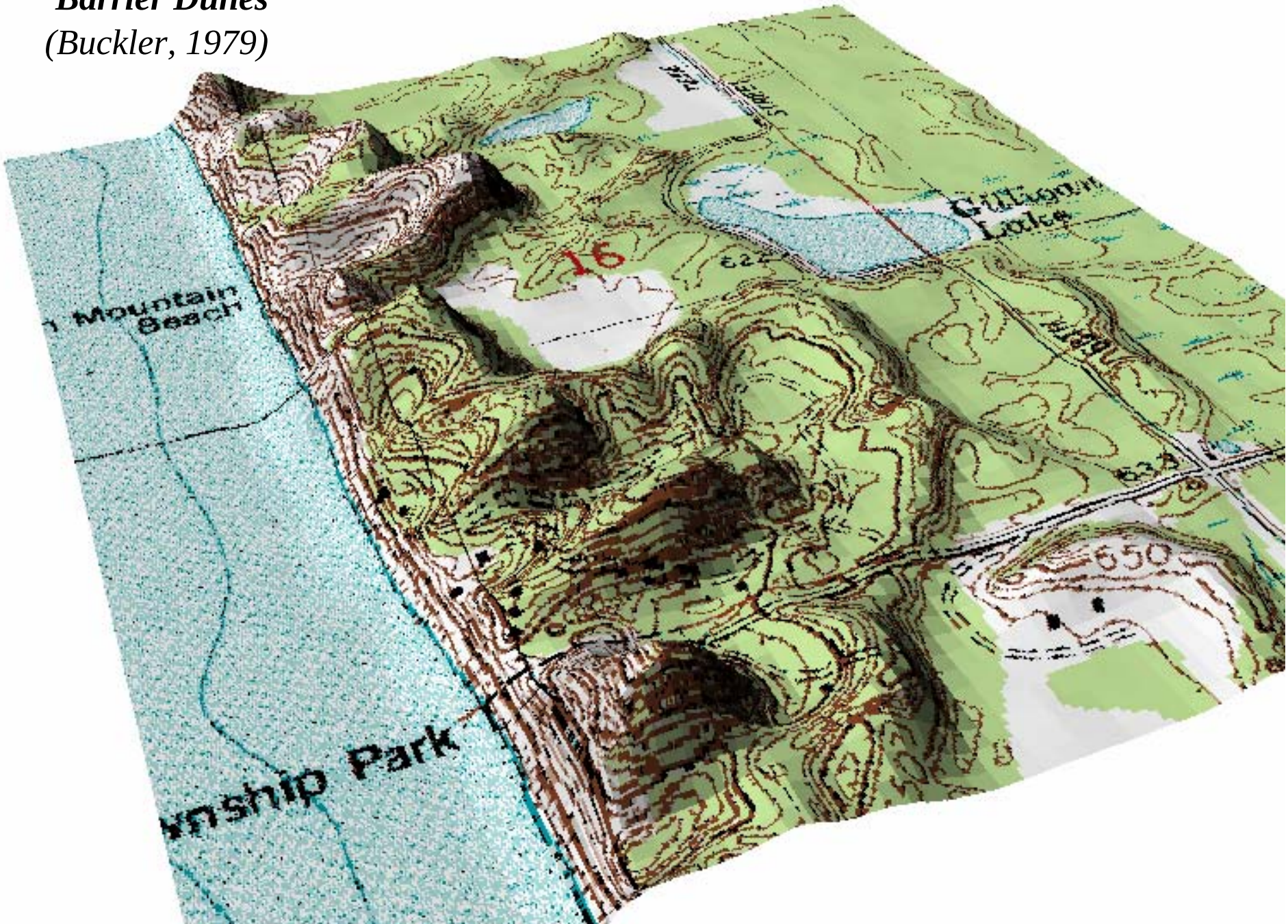
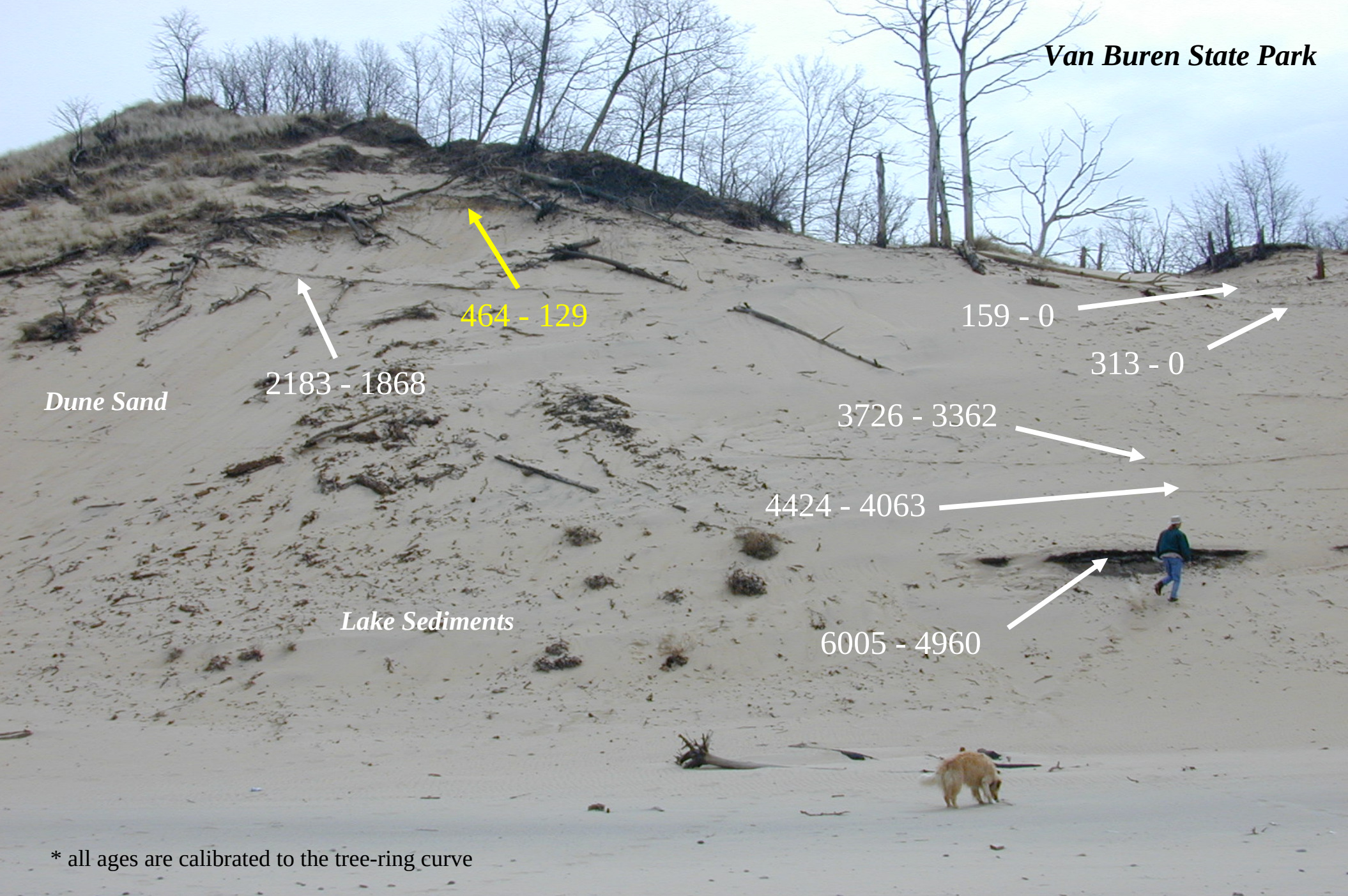
Cliffed Dunes
(Olson, 1958)

Barrier Dunes
(Buckler, 1979)

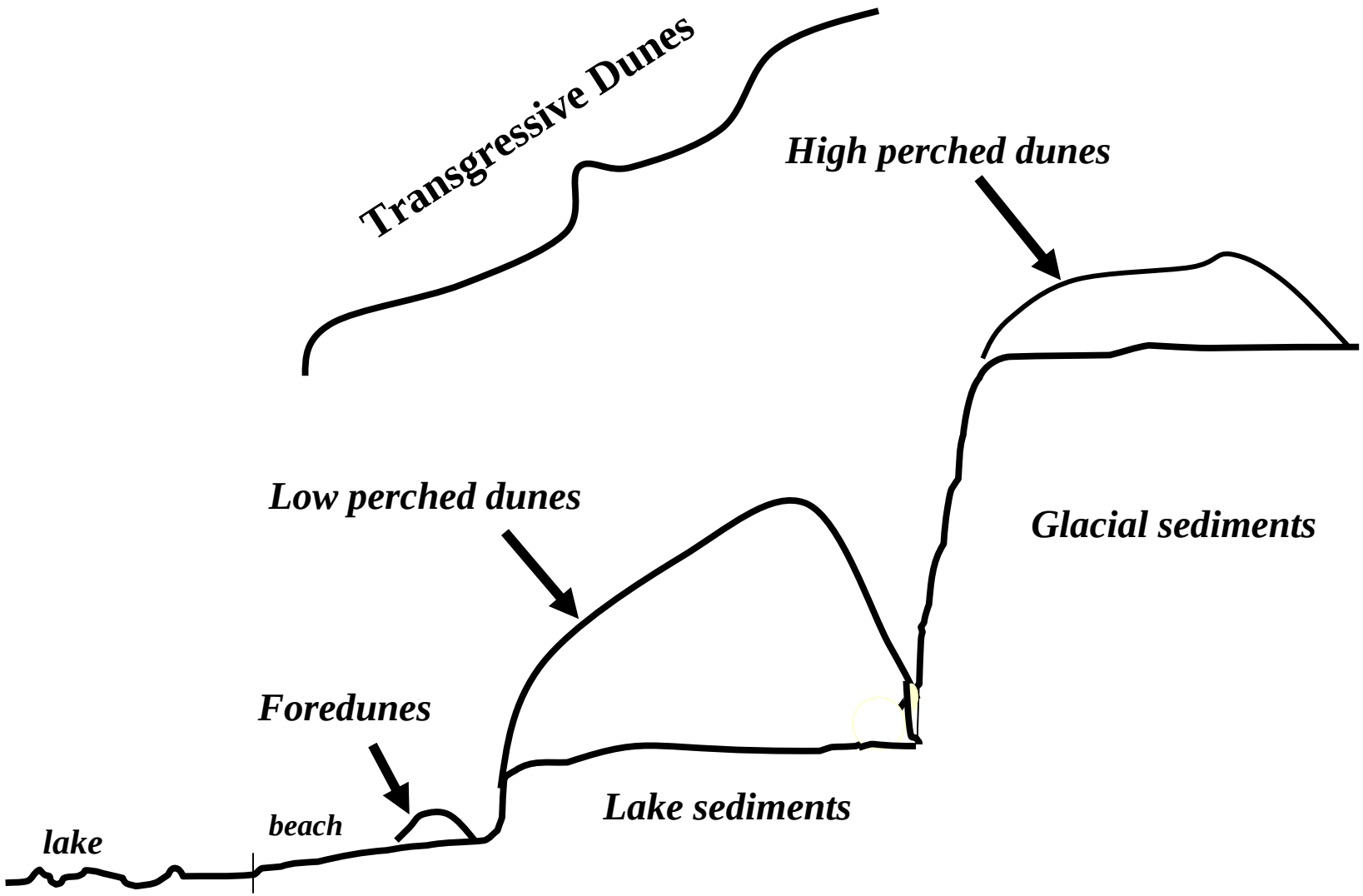




* all ages are calibrated to the tree-ring curve

Transgressive Dunes: ***Dunes that advance across an older surface.***

Africa
The Netherlands
New Zealand
Australia


Transgressive Dunes
High perched dunes
Low perched dunes
Glacial sediments
Foredunes
Lake sediments
beach
lake

Foredunes


Low Perched Dunes
Dune Sand
Lake Sediments

High Perched Dunes

Thanks For Your Attention!