



Plastic Pellets Washing up on Lake Huron Beaches

October

2010

Millions of tiny plastic white pellets have washed up on beaches between Forest and Kincardine north. Similar occurrences were recorded in the Kincardine area in 2007 and 2009.

Occurrence Report

Plastic resin pellets (referred colloquially as 'nurdles') are small granules generally with the shape of a cylinder or a disk with a diameter of a few millimeters. These plastic particles are industrial raw material transported to manufacturing sites where "user plastics" are made by re-melting and molding into the final products. Resin pellets can be unintentionally released to the environment, both during manufacturing and transport.

Plastic pellets were observed washing on the shores of Lake Huron, between Hillsborough Beach, near Forest, and McCrae Point, near Tiverton, in September 2010. Beach goers reported observing pellets beyond the Thanksgiving Weekend (October 10-12, 2010). Similar occurrences were recorded in 2009 (September) in the Kincardine to Point Farms area, and in 2007 (November) in the Kincardine to Point Clark area. There have been anecdotal reports of occurrences prior to these dates.

The resistivity of plastic debris to chemical and mechanical weathering processes poses a serious threat to the environment (Zbyszewski & Corcoran, 2010). Based on recent research at the University of Western Ontario (UWO), plastic particles sampled from selected beaches on Lake Huron were analyzed using Fourier Transform Infrared Spectroscopy (FTIR) to determine polymer composition. The majority of the plastic fragments were found to be industrial pellets composed of polypropylene and polyethylene.

Once deposited on beaches, plastic fragments are exposed to UV radiation and physical processes controlled by winds, currents and waves. Recent work has indicated that saltwater (SW) beach plastics feature both mechanically and chemically weathered surface textures, wherein mechanically weakened fractures are the sites of granular oxidation textures. Analysis of lacustrine (FW) beach plastics is now ongoing (UWO), and shows similar textural effects of mechanical and chemical weathering.

In ocean environments, species of marine organisms (e.g., seabirds) accumulate large numbers of plastic particles in their stomachs. It is thought that they ingest plastic particles not only accidentally but also selectively by mistaking them for food. Ingestion of degraded plastic pellets and fragments raises toxicity concerns, since plastics are known to adsorb hydrophobic pollutants (e.g. PCBs). These pollutants are available in the Lake Huron environment.



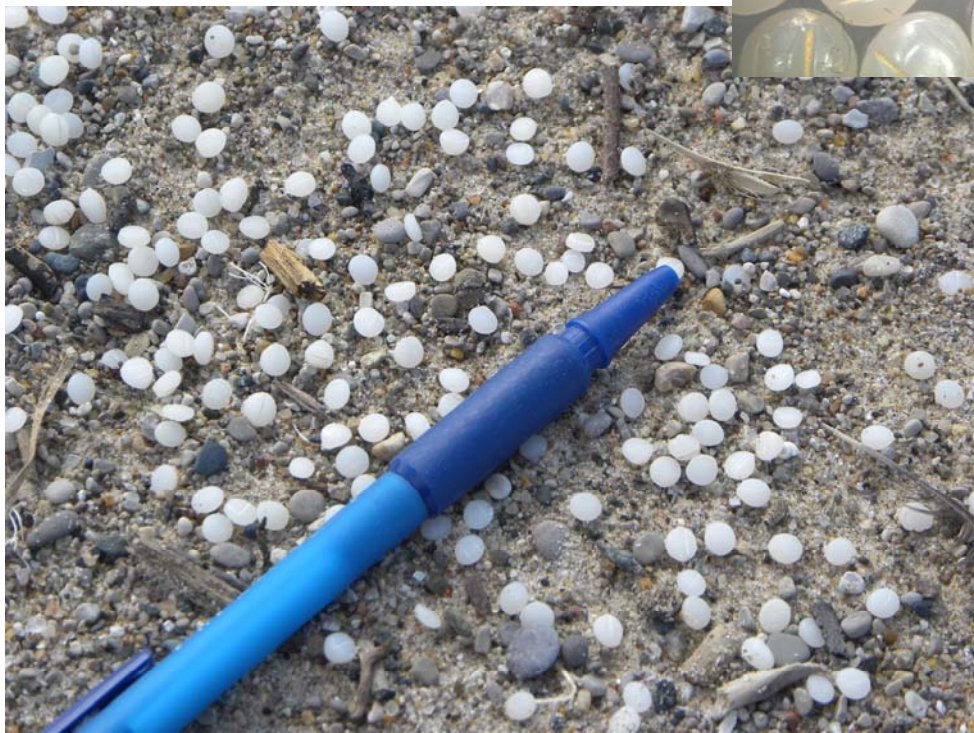
September 29, 2010

Plastic Pellets washed up on area beaches. Occurrence from Kincardine to Port Franks.

Sample taken at:
N 43 19 024
W 81 45 755

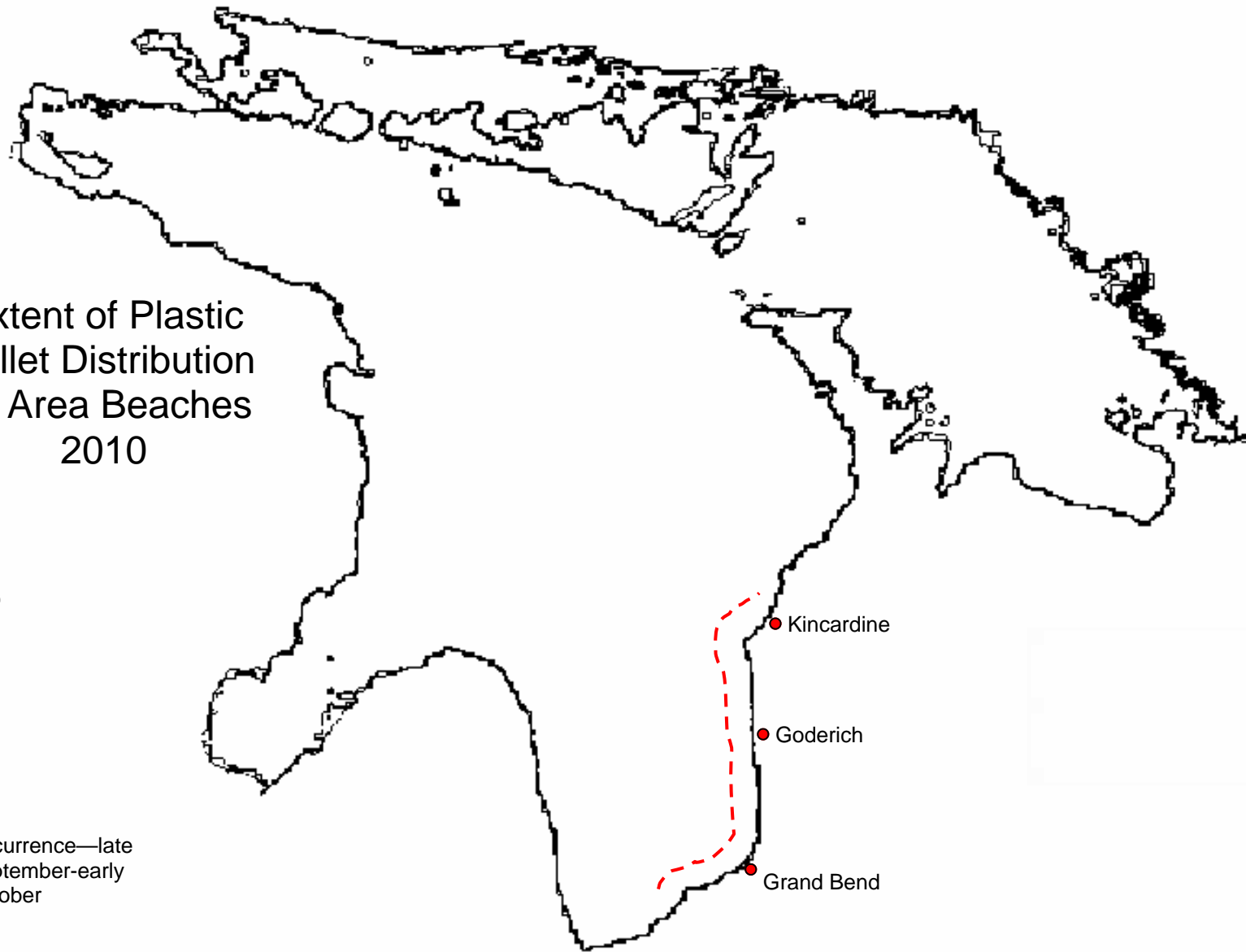


Location of pellets—strand line from recent storm



Extent of Plastic Pellet Distribution
on Area Beaches
2010

Occurrence—late
September-early
October



References

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Fig. 3. Map of the Great Lakes summarizing Harrington's (1894) surface drift studies.

Thermal Structure and Circulation in the Great Lakes, F.M. Boyce, M.A. Donelan, P.F. Hamblin, C.R. Murthy and T.J. Simons, 1989.