Geocaching Activity Role Play Handout – BIOLOGIST
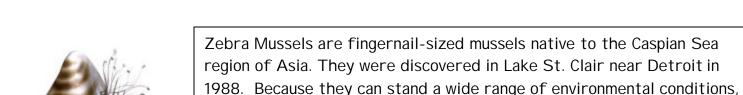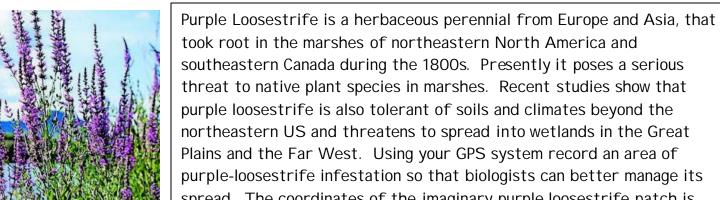
Imagine that you are a Biologist with the Michigan Dept. of Natural Resources studying invasive species. (Invasive species are non-native plants and animals that can damage local ecosystems.) It is important to document the spread of invasive species so that biologists can find a way to better control them. Today it is your job to tract five invasive species sightings in Michigan so their spread can be measured and managed, including the Zebra Mussel, Purple Loosestrife, Goby, Sea Lamprey, and the Emerald Ash Borer. Use your GPS system and walk from location to location to document the location of each species and you will find a reward.

Zebra Mussels are fingernail-sized mussels native to the Caspian Sea region of Asia. They were discovered in Lake St. Clair near Detroit in 1988. Because they can stand a wide range of environmental conditions, zebra mussels have now spread throughout the Great Lakes. They kill and severely reduce native mussel species. Zebra mussels clog water-intake systems of power plants and water treatment facilities, as well as irrigation systems, and the cooling systems of boat engines. Use your GPS system to record an imaginary area where the zebra mussel has been spotted at _____.

Purple Loosestrife is a herbaceous perennial from Europe and Asia, that took root in the marshes of northeastern North America and southeastern Canada during the 1800s. Presently it poses a serious threat to native plant species in marshes. Recent studies show that purple loosestrife is also tolerant of soils and climates beyond the northeastern US and threatens to spread into wetlands in the Great Plains and the Far West. Using your GPS system record an area of purple-loosestrife infestation so that biologists can better manage its spread. The coordinates of the imaginary purple loosestrife patch is _____.

Gobies are bottom-dwelling fish that were originally introduced into the St. Claire River in 1990, probably through contaminated ballast water of cargo ships. Gobies are thriving in the Great Lakes Basin because they are aggressive feeders which can forage in total darkness. They take over prime spawning (reproducing) sites usually used by native fish species, competing with native fish for habitat and changing the balance of the ecosystem. After finding a large number of Gobies at one location a biologist would record that data with a GPS system. Record the coordinates for the imaginary Gobies at

_____.

The Sea Lamprey is an aggressive parasite, equipped with a tooth-filled mouth that flares open at the end of its eel-like body. These fish are native to the coastal regions of both sides of the Atlantic Ocean but in about 1921 they entered the Great Lakes through the Welland Canal. They contributed greatly to the decline of whitefish and lake trout. Scientists have found a chemical that selectively kills sea lamprey larvae (the immature stage) in spawning streams and have brought the lamprey population under control. However, some biologists are concerned that these surviving populations might eventually develop a resistance to the chemical. Biologists are interested in using GPS to determine the location of Lamprey spawning sites so that new control measures can be applied. Use your GPS to locate the imaginary Lamprey spawning location at

_____.

The Emerald Ash Borer is a metallic green beetle from Asia that was discovered in southeastern Michigan near Detroit in the summer of 2002. Adult beetles nibble on ash tree leaves and don't harm trees. But the larvae (the immature stage) kill ash trees by feeding and disrupting the tree's ability to transport water and nutrients. Since their arrival, the Emerald Ash Borer has killed at least 8 to 10 million ash trees in Michigan, Ohio and Indiana. Most of the devastation is in southeastern Michigan. Firewood cannot be moved in many areas of Michigan, Ohio and Indiana because of a quarantine on ash tree wood to stop the spread of the beetle. Use your GPS to locate an imaginary contaminated area at _____ so that we can help stop the spread of the beetle.