**CostDist\_Mich\_4ha\_lakes\_1500mBuff.csv**

Description: Cost surface Zonal Statistics (as a table) output (ArcGIS v. 10.3.1) for dispersal buffers (1500 m) around Michigan lakes (≥ 4 ha).

Location: LivinOnTheEdge/Data

Columns

OBJECTID: auto-generated ArcGIS unique row identifier

lagoslakei: lagoslakeid; unique lake identifier in LAGOSNE

COUNT: number of cost surface cells in zone

AREA: area (m2) of cost surface cells in zone (COUNT \* 900 m2)

MIN: minimum cost surface value within zone

MAX: maximum cost surface value within zone

RANGE: MAX – MIN

MEAN: mean cost surface value within zone

STD: standard deviation of cost surface values within zone

SUM: total cost surface value within zone

**LakeWetlandPatchStats\_1500mBuff.csv**

Description: Patch statistics for lakes and wetlands within dispersal buffers (1500 m) around Michigan lakes (≥ 4 ha). Calculated with LivinOnTheEdge/Rcode/LakesWetlands\_in\_DispersalBuffers.R.

Location: LivinOnTheEdge/Data

Columns

lagoslakeid: unique lake identifier in LAGOSNE

nLakePatches: number of lake patches (≥ 0.1 ha) intersecting with buffer

LakeEdge\_km: length of lake patches (km) within buffer (only lake parts in buffer; analogous to entry points to other waterbodies from focal lake)

LakeEdgeArea\_ha: amount of lake edge habitat, function of LakeEdge\_km and assumption that 30m of perimeter=1 30x30m cell area (900m2)

LakeEdgeArea\_pct: proportion of buffer covered by lake edge habitat (focal lake removed)

nWetlandPatches: number of wetland patches within buffer

WetlandEdge\_km: length of wetland patches (km) within buffer (only wetland parts in buffer; analogous to entry points to other waterbodies from focal lake)

WetlandArea\_ha: amount of wetland habitat within buffer

WetlandArea\_pct: proportion of buffer covered by wetland habitat (focal lake removed)

BufferWidth\_m: width of buffer around lake used in analysis

**Michigan\_LAGOS\_conn\_metrics.csv**

Description: Freshwater connectivity metrics for Michigan lakes (≥ 4 ha) extracted from LAGOSNE (see LAGOSNE R package help for more details). Calculated with LivinOnTheEdge/Rcode/Michigan\_LAGOS\_conn\_metrics.R.

Location: LivinOnTheEdge/Data

Columns

lagoslakeid: unique lake identifier in LAGOSNE

iws\_lakes\_overlapping\_area\_pct: proportion of watershed (iws) (excluding focal lake area) covered by lakes (≥ 4 ha)

iws\_streamdensity\_streams\_density\_mperha: all streams (NHDFlowline minus artificial lines through lakes) within the lake watershed (iws) expressed as meters per hectare (mperha)

iws\_wl\_allwetlandsdissolved\_overlapping\_area\_pct: proportion of watershed (iws) (excluding focal lake area) covered by wetland polygons (all types, dissolved)

iws\_wl\_connectedwetlandsundissolved\_overlapping\_area\_pct: proportion of watershed (iws) (excluding focal lake area) covered by connected wetland patches (intersected within a 30 m buffer by a higher order stream or by multiple streams). The patches were left as delineated by the National Wetlands Inventory ("undissolved") for calculating this variable

buffer500m\_streamdensity\_streams\_density\_mperha: all streams (NHDFlowline minus artificial lines through lakes) within 500 m zone from focal lake expressed as meters per hectare (mperha)

shoreline\_wetlands\_pct: proportion of lake shoreline adjacent to wetlands (adjacency defined as occurring within 30 m of lake shoreline)

iws\_damdensity\_pointsperha: number of dams per hectare within the lake watershed (iws)

Michian\_Lake\_Conn\_Scores.csv

Description: semi-aquatic and aquatic connectivity scores for Michigan lakes (≥ 4 ha), calculated in LivinOnTheEdge/Rcode/Aquatic\_SemiAquatic\_LakeConn\_Indices.R

Location: LivinOnTheEdge/Data

Columns

lagoslakeid: unique lake identifier in LAGOSNE

PChydroall: aquatic connectivity score (based on PCA scores for aquatic variables)

PCterrall: semi-aquatic connectivity score (based on PCA scores for semi-aquatic variables)

hydro\_terr: combined aquatic/semi-aquatic connectivity score

**Michigan\_Lake\_Conn\_Scores.csv**

Description: Aquatic and semi-aquatic connectivity scores for Michigan lakes (≥ 4 ha) extracted Calculated with LivinOnTheEdge/Rcode/ Aquatic\_SemiAquatic\_LakeConn\_Indices.R. See manuscript methods for description of variables and principal components analysis.

Location: LivinOnTheEdge/Data

Columns

lagoslakeid: unique lake identifier in LAGOSNE

PChydroall: aquatic connectivity score (previously named hydrologic; hence hydro in name)

PCterrall: semi-aquatic connectivity score (previously named terrestrial; hence terr in name)

hydro\_terr: combined aquatic and semi-aquatic connectivity score

**MichiganLakePatchStats\_wBorderStates.csv**

Description: Patch statistics for Michigan lakes (≥ 4 ha), including US lakes within 10 km of the Michigan border; output from SDMTools::PatchStat, calculated in LivinOnTheEdge/Rcode/MichiganLakePatchStats.R.

Location: LivinOnTheEdge/Data

Columns

patchID: the unique ID for each patch (lagoslakeid in LAGOSNE)

n.cell: the number of cells for each patch, specified in square meters

n.core.cell: the number of cells in the core area, without the edge area

n.edges.perimeter: the number of outer perimeter cell edges of the patch

n.edges.internal: the number of internal cell edges of the patch

area: the area of each patch comprising a landscape mosaic (m2)

core.area: represents the interior area (m2) of the patch, greater than the specified depth-of-edge distance from the perimeter

perimeter: the perimeter of the patch, including any internal holes in the patch, specified in meters

perim.area.ratio: the ratio of the patch perimeter (m) to area (m2)

shape.index: the shape complexity, sum of each patch’s perimeter divided by the square root of patch area

frac.dim.index: fractal dimension index reflects shape complexity across a range of spatial scales; approaches 2 times the logarithm of patch perimeter (m) divided by the logarithm of patch area (m2)

core.area.index: quantifies core area as a percentage of patch area

edge.area: area (m2) of edge habitat within patch, with edge habitat defined as 30 x 30 m cells along patch margins. Not included in SDMTools::PatchStat

edge.area.index: quantifies edge area as a percentage of patch area. Not included in SDMTools::PatchStat

**PADUS\_LAGOSNE\_IWS.csv**

Description: Tabulate Area output (ArcGIS v. 10.3.1) for protected land within watersheds (iws) for lakes (≥ 4 ha) from LAGOSNE. Protected lands based on US Protected Areas Database (PADUS) v. 1.4. Watersheds with no protected land were excluded.

Location: LivinOnTheEdge/Data

Columns

OBJECTID: auto-generated ArcGIS unique row identifier

LAGOSLAKEI: lagoslakeid; unique lake identifier in LAGOSNE

A\_1: area (m2) of land under GAP status 1 (strict protection; managed for biodiversity with disturbances allowed to proceed or mimicked)

A\_2: area (m2) of land under GAP status 2 (strict protection; managed for biodiversity with disturbances suppressed)

A\_3: area (m2) of land under GAP status 3 (multi-use)

**PADUS\_MI\_Buff1500m\_pct.csv**

Description: Proportion of dispersal buffers (1500 m) protected based on Tabulate Area output (ArcGIS v. 10.3.1) for Michigan lakes (≥ 4 ha) from LAGOSNE. Protected lands based on US Protected Areas Database (PADUS) v. 1.4. Buffers with no protected land were excluded. Calculated in: LivinOnTheEdge/Rcode/PercentProtected\_IWS\_LakeBuffers.R.

Location: LivinOnTheEdge/Data

Columns

LAGOSLAKEI: lagoslakeid; unique lake identifier in LAGOSNE

OBJECTID: auto-generated ArcGIS unique row identifier

A\_1: area (m2) of land under GAP status 1 (strict protection; managed for biodiversity with disturbances allowed to proceed or mimicked)

A\_2: area (m2) of land under GAP status 2 (strict protection; managed for biodiversity with disturbances suppressed)

A\_3: area (m2) of land under GAP status 3 (multi-use)

buff\_area\_ha.x: area of buffer (ha) (same as buff\_area\_ha; duplicated by table merge)

GAP12\_buff\_ha: area of buffer under GAP status 1 or 2

GAP123\_buff\_ha: area of buffer under GAP status 1, 2 or 3

GAP12\_buff\_pct: proportion of buffer under GAP status 1 or 2

GAP123\_buff\_pct: proportion of buffer under GAP status 1, 2 or 3

buff\_area\_ha.y: area of buffer (ha) (same as buff\_area\_ha; duplicated by table merge)

buff\_area\_ha: area of buffer (ha)

**PADUS\_MI\_IWS\_pct.csv**

Description: Proportion of lake watersheds (iws) protected based on Tabulate Area output (ArcGIS v. 10.3.1) for Michigan lakes (≥ 4 ha) from LAGOSNE. Protected lands based on US Protected Areas Database (PADUS) v. 1.4. Watersheds with no protected land were excluded. Calculated in: LivinOnTheEdge/Rcode/PercentProtected\_IWS\_LakeBuffers.R.

Location: LivinOnTheEdge/Data

Columns

LAGOSLAKEI: lagoslakeid; unique lake identifier in LAGOSNE

OBJECTID: auto-generated ArcGIS unique row identifier

A\_1: area (m2) of land under GAP status 1 (strict protection; managed for biodiversity with disturbances allowed to proceed or mimicked)

A\_2: area (m2) of land under GAP status 2 (strict protection; managed for biodiversity with disturbances suppressed)

A\_3: area (m2) of land under GAP status 3 (multi-use)

IWS\_area\_ha.x: area of watershed (ha) (same as buff\_area\_ha; duplicated by table merge)

GAP12\_IWS\_ha: area of watershed under GAP status 1 or 2

GAP123\_IWS\_ha: area of watershed under GAP status 1, 2 or 3

GAP12\_IWS\_pct: proportion of watershed under GAP status 1 or 2

GAP123\_IWS\_pct: proportion of watershed under GAP status 1, 2 or 3

IWS\_area\_ha.y: area of watershed (ha) (same as IWS\_area\_ha; duplicated by table merge)

IWS\_area\_ha: area of watershed (ha)

**PADUS\_Mich\_4ha\_lakes\_1500mBuff.csv**

Description: Tabulate Area output (ArcGIS v. 10.6) for protected land within dispersal buffers (1500 m) for Michigan lakes (≥ 4 ha) from LAGOSNE. Protected lands based on US Protected Areas Database (PADUS) v. 1.4. Buffers with no protected land were excluded.

Location: LivinOnTheEdge/Data

Columns

OBJECTID: auto-generated ArcGIS unique row identifier

LAGOSLAKEI: lagoslakeid; unique lake identifier in LAGOSNE

A\_1: area (m2) of land under GAP status 1 (strict protection; managed for biodiversity with disturbances allowed to proceed or mimicked)

A\_2: area (m2) of land under GAP status 2 (strict protection; managed for biodiversity with disturbances suppressed)

A\_3: area (m2) of land under GAP status 3 (multi-use)