



EMMET
CONSERVATION
DISTRICT

Emmet Conservation District

2022 CONSERVATION NEEDS ASSESSMENT

Resource Assessment & Strategic Plan

Report Date: 4/1/2022

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EXECUTIVE SUMMARY

Every 5 years, Conservation Districts conduct a Conservation Needs Assessment (CNA), or Resource Assessment, to identify and prioritize the most pressing natural resources issues in their communities, and to identify resources needed to address those issues.

DISTRICT'S RESOURCES:

Emmet Conservation District (ECD) is a stand-alone local unit of government, with a 5-member Board of Directors that meets monthly. Emmet County provides supports ECD by providing an office and office services through an in-kind contribution. Funding for ECD comes from the annual MDARD District Operations Grant, a monetary allocation from Emmet County (in 2021 ECD received \$30,000 from EC), tree sale profits, workshops, and donations. ECD has one staff member, the District Manager, and is planning to hire additional staff to increase ECD capabilities and services.

KEY FINDINGS:

Emmet County residents care about natural resources issues and are very invested in protection of those resources. Most survey responses indicated strong support for natural resources protection and enhancement programs, are very engaged locally, and want more opportunities for education and to help. Emmet County is rich in resources and generally excellent in terms of protection.

MAIN STEPS TAKEN FOR THE CNA/RA:

Public was informed of the CNA/RA via newspaper article, hard copies and electronic copies of surveys were handed out and collected from willing participants. Information was compiled, tallied, reviewed, and results will guide the ECD with planning for the next 5 years.

PROCESS USED FOR PRIORITIZING:

Prioritization was completed using responses and percentages.

DISTRICT RESOURCES DETAILS

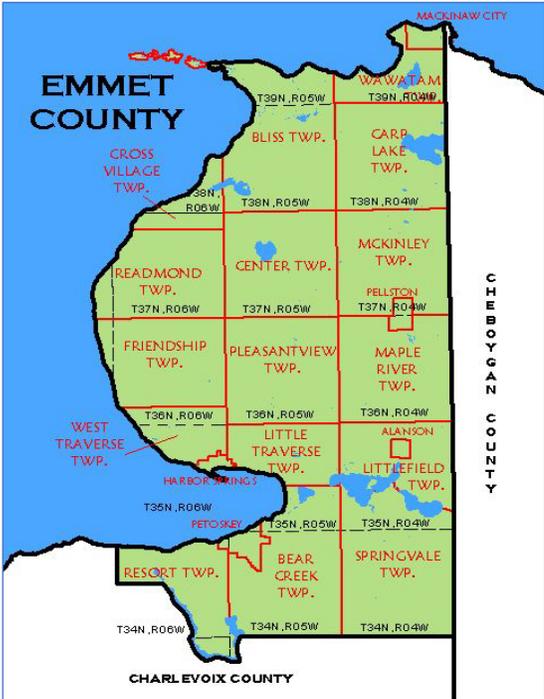
LOCATION AND DESCRIPTION:

Organized in 1853, Emmet County is situated at the top of Michigan’s Lower Peninsula, in an area locally referred to as the “Tip of the Mitt.” The county has an approximate area of 483 square miles, and includes nearly 309,228 acres of lakes, rivers, streams, and wetlands. Natural borders include: 68 total miles of Lake Michigan shoreline that includes 26 miles of Lake Michigan coastline to the west and the Straits of Mackinac to the north, Cheboygan County along the east, and southern border runs through Walloon Lake, which is shared with Charlevoix County. The county includes 2 cities, 3 incorporated villages, 16 townships, 5 school districts, North Central Michigan College, and the home of the Little Traverse Bay Bands of Odawa Indians (LTBB) Federally-recognized Tribe and Tribal government headquarters, and Historical Reservation.

The estimated permanent population of the county in 2017 was 32,978. Northern Michigan is a popular destination that experiences significant increases in population throughout the year. During the summer, the area can see up to a 4-fold increase in population, with July being the peak month for visitors, as well as second-home/seasonal residents. Visitors flock to the area to enjoy the lakes, rivers, streams, and woods to enjoy a variety of outdoor recreation activities. The vibrant colors of the changing forests draw visitors during the fall, as well as hunting and fishing opportunities. During the winter, snowmobilers, skiers, snowboarders, and snowshoers come to the area enjoy the snow on local trails and ski hills.



Map of Michigan showing location of Emmet County (in red)



Map of Emmet County Townships

SOILS:

- **SOILS OVERVIEW:**

Much of Emmet County soils are upland sandy and loamy soil types such as the Emmet Soil Series (deep, well to moderately drained soils, formed on sandy loam till, found on moraines), Blue Lake Sand (found on moraines, ice ridges and outwash plains), Kalkaska Sand, Roscommon Sand, dunes, and gravel pits. Lowland soils include Carbondale Muck and Tawas Muck (found on ground moraines, outwash plains, and lake plains and characterized by deep, poorly-drained organic soils).

Emmet County has a Soil Erosion and Sediment Control Ordinance and issues or denies permits applications submitted to the Soil Erosion Officer (currently Nancy Salar), in the Emmet County Planning and Zoning Department.

- **SAND DUNES:**

The sand dunes along the Lake Michigan coastline are the longest stretch of freshwater dunes in the world, and they support a number of rare organisms, high quality habitats, and natural communities. Emmet County had a special Dune Ordinance until changes were made to the State's Critical Dunes law in 2013, after which local dune ordinances were repealed. Dunes are currently regulated by the State of Michigan's Department of EGLE. Disturbance and development are the biggest threats to dunes. Development often involves hardening of the landscape, sand movement/destabilization or conversely, intentional stabilization, planting shallowly-rooted lawn grasses and other non-native and/or invasive plants, often accompanied by fertilizers and herbicides that cannot bind to sand and usually end up washing out into the lake.



EMMET COUNTY SOILS MAP

AGRICULTURE:

Agriculture is an important sector that contributes to the local economy and to the aesthetics of the scenic, rural landscape. Emmet County has designated specific areas with prime agricultural lands and farming communities as “Emmet County Agricultural Preservation Districts,” which are areas identified by the US Department of Agriculture (USDA) as having productive soils and prime/productive farmlands. Visitors are drawn to the area’s scenic, rural landscapes. Additionally, the State of Michigan recognizes 16 Centennial Farms in Emmet County, which are farms greater than 10 acres in size, have remained in the same family for more than 100 years, and contribute to the state’s historic and continuing development.

Agricultural activities in Emmet County include fruit and vegetable production, animal farms (e.g., cows, pigs, horses, fowl), vineyards/wine production, tree farms, cut flower businesses, “you-pick” farms, and farmers markets. Within recent years, a growing Amish community is becoming established in the Brutus area. The LTBB has also established the Ziibimijwaang Farm and Minogin Market.

Agricultural resources available in Emmet County include:

- The MAEAP Program – a voluntary program for farmers to educate and improve best management practices; administered by Charlevoix County CD, covers for Emmet, Charlevoix, and and Otsego Counties). Contact: Chris Anderson, MAEAP Technician
- USDA NRCS – federal programs available to farmers/landowners. Contact: Bill Borgeld
- Emmet County MSU-Extension Programs: 4H, Food Assistance programs, and Tribal Programs. At-home soil testing kits are available for the public to purchase through the mail. Contact MSU-Extension Office or website.
- Emmet County Farm Bureau. Contact office.

FORESTS:

Into the late 1800’s, Michigan experienced a state-wide boom in timber towns and lumber production. Most of the state’s forests were logged for their towering white pines, sugar maples, and white ashes, with very few virgin stands remaining. The remaining slash piles caught fire and created hot fires that incinerated soils across the state. The slash fires essentially set the soils geologic time-clock back to zero in many areas, as the top, organic layer of the soil was burned away. After the fires, disturbance-loving and short-lived species such as aspen and birch thrived, and are now nearing the ends of their natural life-spans (without severe disturbance such as clearcutting and/or fire). The understory of the declining aspen forests includes white pine, red maple, sugar maple, which will eventually succeed the aspen as they die off and become the next primary forest types.

The majority of Emmet County’s woodlands are deciduous forests with northern and central hardwoods, aspen, birch, and lowland hardwoods. Coniferous forests include white pine and other upland conifers, lowland conifer forests, and Christmas tree farms. Emmet County is said to have some of the highest quality sugar maple in the world. Much of the forestland in Emmet County is owned by the State of Michigan/MDNR. Most privately-owned forestlands in Emmet County are considered “small woodlots,” which are usually ~10-40 acres in size. Small woodlots make forestry a challenge, since landowners usually

work/manage their properties independently, as opposed to collectively, and most foresters/loggers are interested in larger tracts for logging operations.

Conservation District forestry assistance is now available to ECD and Emmet County landowners via the Alpena-Montmorency Conservation District's District Forester, Dr. Greg Corace, is able to assist Emmet County landowners by providing important information, forest plan reviews, as well as site visits. The ECD MAEAP Technician also is a good resource for local forestry information.

INVASIVE SPECIES:

Invasive Species have severely impacted Emmet County. Dutch elm's disease and chestnut blight were diseases that impacted and just about eliminated mature elms and chestnuts. Emerald ash borer has decimated most mature ash stands. Bronze birch borer has been attacking birch trees. Beech bark disease quickly took most of the area's large beech trees, and most young infected trees do not live very long. This disease severely threatens the continued existence of beech trees in Michigan, since they do not reach peak reproductive age until they are ~40 years old. Hemlock trees are threatened by the spread of the hemlock wooly adelgid from their introduction along the eastern US coast. Spotted lanternfly continues to spread and was found in Michigan for the first time in 2022, threatening Michigan's fruit trees. Oak wilt is a highly transmittible disease not yet found in Emmet County, but has been found and treated in both neighboring counties of Cheboygan and Charlevoix. Since the majority of Emmet County's natural oak communities are dominated by red oak, which is highly susceptible to oak wilt with no known cure/treatment, oak wilt would be devastating if it spread into Emmet County.

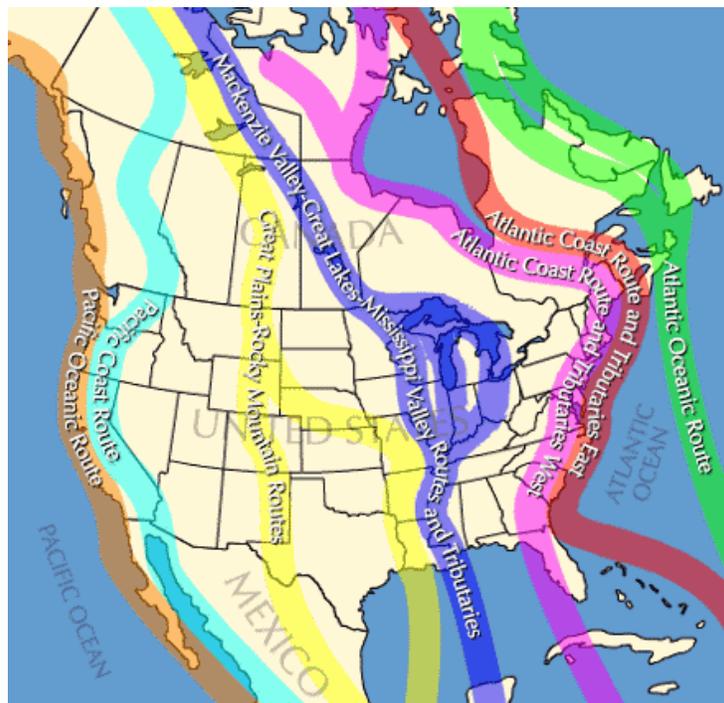
Invasive plants continue to cause numerous harmful issues and their negative impacts are felt far and wide. Invasive species are costly to treat, and are usually difficult to impossible to get rid of once they become established, and most efforts go towards trying to reduce their negative impacts. ECD has been very active in local invasive species efforts over the years, and was even instrumental in the formation, establishment, and early management efforts of the CAKE CISMA. While the ECD Board voted in October 2020 to resign from the CAKE CISMA Steering Committee due to a number of factors including maintaining ECD autonomy and integrity, the ECD is continuing its invasive species outreach and management projects in Emmet County, prioritizing Early Detection Rapid Responses (EDRR) for high priority invasive species.

SPECIAL PLANTS, ANIMALS, AND NATURAL COMMUNITIES:

Emmet County is geographically located in the "boreal transition zone," which is the transitional area between the temperate climactic zone to the south, and the boreal zone to the north. This position in the transition zone along with Emmet County's distinctive geologic location atop the tip of the Northern Lower Peninsula of Michigan, along the northern Great Lakes, allows for it to be one of the most diverse areas in Michigan, supporting a variety of high-quality and rare habitats, species, and natural communities. Michigan Natural Features Inventory (MNFI) keeps records and is an excellent resource for Emmet County regarding rare, State and Federally-listed species, and special/rare communities and their habitats.

WILDLIFE:

Emmet County has an abundance of wildlife including deer, bear, fox, coyotes, bobcats, and small mammals such as cottontail and snowshoe rabbits, ermine/weasels, mink, beaver, groundhogs, voles, squirrels, flying squirrels, and occasionally wolves have been found passing on field cameras. Though there are no known breeding/resident wolves currently in the County, several years ago the MDNR Wildlife Division confirmed the existence of a pack of coy wolves (hybrid coyote/wolf), but none have been seen/reported in the last several years. Emmet County's location at the tip of the Lower Peninsula makes it an excellent for bird watching as is one of the primary migration corridors in North America (see image below). There are many active wildlife conservation organizations in Emmet County including Trout Unlimited, the Rocky Mountain Elk Club, Tip of the Mitt DQMA, Ducks Unlimited, the Petoskey Audubon Society, and the Mackinaw Straits Raptor Watch.



Map of North American Bird Migration Flyways

Aquatic wildlife includes a variety of fish species including perch, walleye, bluegill, large-mouth and small-mouth bass, gar, sturgeon, as well as species such as salmon and steelhead that return to inland rivers to spawn. Whitefish and Lake Trout are popular game fish. Other aquatic wildlife includes a variety of turtles, snakes, leeches, and crayfish. Most streams and shorelines are rich in macroinvertebrates, a variety of algae, and zooplankton that play important roles in the aquatic food chain, and are good indicators of water quality.

Emmet County is home to one of the world's most endangered species – the Hungerford's Crawling Water Beetle (*Brychius hungerfordi*). The Federally Endangered beetle has been found at only 5 locations worldwide, two of which are in Emmet County – the East Branch of the Maple River, and the Oliver Road crossing of Carp Lake River. However, the one location along the East Branch of the Maple River recently had the culvert removed and replaced with a timber bridge, and it is unclear if the beetles are still there. The Oliver Road crossing location had 4 specimens in 1997, but erosion at the road seemed to have harmed the habitat and no specimens were observed since the last survey in 2003.



*Image of Endangered
Hungerford's Crawling
Water Beetle*

The Federally Endangered Piping Plover (*Charadrius melodus*) is also found in Emmet County. These small, migratory shorebirds nest along pebble-covered Lake Michigan shorelines. Habitat destruction/alteration and human development along shorelines have extirpated piping plovers from most of their former range throughout the Great Lakes region. Since their Endangered Species listing, recovery efforts have helped to increase the population from 20 pairs in 1986, to 75 breeding pairs in 2016. Those recovery efforts are in large part due to a local hero, Dr. Francine Cuthbert from the University of Minnesota, who has conducted plover research for decades at the University of Michigan Biological Station in Pellston, as well as developed a captive rearing program for chicks.

WATER:

Emmet County is abundant with aquatic resources. The County has a total of 68 miles of Lake Michigan shoreline stretching from Little Traverse Bay up and along the Straits of Mackinaw, 28 inland lakes, rivers, and numerous stream systems, and is known for its local freshwater springs, which is how cities such as Harbor Springs got their names.

The 38.2 mile-long Inland Waterway is Michigan's longest chain of rivers and lakes. It begins in Emmet County just east of the dunes at Petoskey State Park, where it flows west to Round Lake, Pickerel Lake, Crooked Lake, and the Crooked River in Emmet County, then to Cheboygan County where it flows into Burt Lake, Indian River, Mullett Lake, the Cheboygan River, and finally out to Lake Huron.

Nearly all of Emmet County relies on groundwater for drinking water, with the exception of the cities of Petoskey and Harbor Springs, which are on community water systems. Most groundwater resources in Emmet County are still considered high quality, however there are several exceptions. In recent years, persistent PFAS chemicals have been found in drinking water in the Village of Pellston, and as a result, Emmet County, the Village of Pellston, and the State of MI have been working together to provide residents with water testing, purchasing and replacing tap filters, providing bottled drinking water, as well as working to identify solutions/management options for the Village.

Emmet County has several leaky underground storage tank (LUST) sites (per the State of Michigan EGLE website). Sub-surface aquifer contamination has also occurred from historical industrial activities at several locations in the county, especially within the City of Petoskey.

- **LAKES:**

Arnett Lake, Crooked Lake, French Farm Lake, Larks Lake, O'Neil Lake, Pickerel Lake, Round Lake, Mud Lake, Walloon Lake, Wycamp Lake; Lake Michigan, Straits of Mackinac.

- **RIVERS:**

Bear River, Carp Lake River, Crooked River, Maple River.

- **WETLANDS:** 46,864 acres (State of Michigan Emmet County Wetland Map, as updated in 2006). See Emmet County Wetland Inventory Map below.

Emmet County Final Wetland Inventory

Emmet County Final Wetland Inventory

The Michigan Department of Environment, Great Lakes and Energy (MDA) has completed the final wetland inventory for Emmet County, Michigan. This inventory was completed in accordance with the requirements of the Clean Water Act (CWA) and the National Wetlands Inventory (NWI) program. The inventory was completed using the National Wetlands Inventory (NWI) program and the National Wetlands Inventory (NWI) program. The inventory was completed using the National Wetlands Inventory (NWI) program and the National Wetlands Inventory (NWI) program.

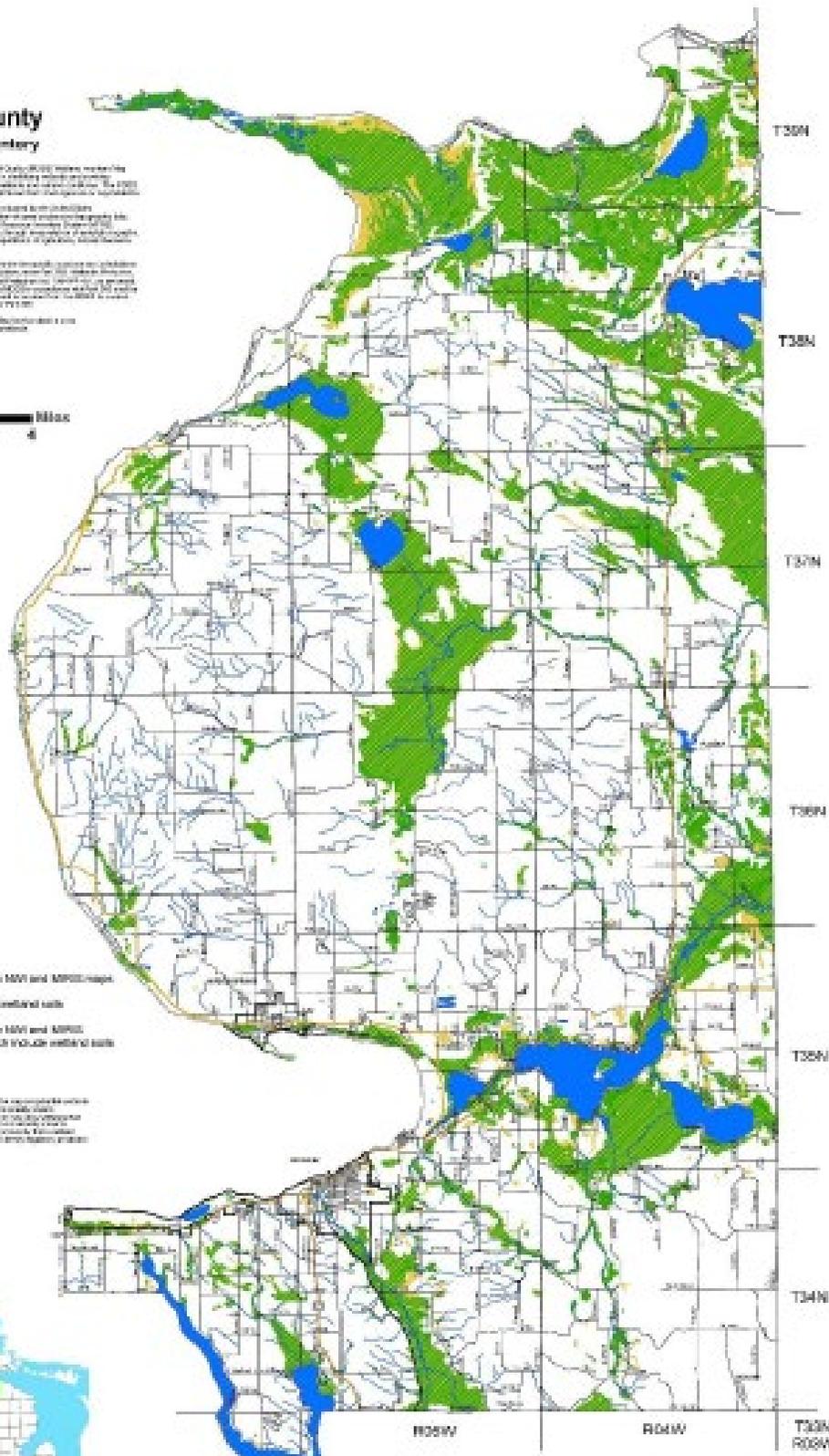


Legend

- Interstate Highways
- US Highways
- State Highways
- Railways
- Open Water
- Rivers
- Ditches
- Wetlands identified on MVI and MPO maps
- Wet areas which include wetland soils
- Wetlands identified on MVI and MPO maps and wet areas which include wetland soils
- County boundary

This map was prepared under the supervision of the Michigan Department of Environment, Great Lakes and Energy (MDA) and the National Wetlands Inventory (NWI) program. The map was prepared using the National Wetlands Inventory (NWI) program and the National Wetlands Inventory (NWI) program.

Map scale: 1:50,000



Water quality: Water quality is generally very good. There are occasional water quality impairments that have led to water advisories or beach closures. Impairments (LTBB Water Quality Assessment Report/EPA/MDEQ).

Aquatic invasive species include zebra and quagga mussels, sea lamprey, Eurasian watermilfoil, curly-leaf pondweed, Bythotrephes (an invasive zooplankton), and avian/bird flu.

AIR:

Emmet County's air quality ranks "Good" by the U.S. Environmental Protection Agencies' "AirNow" monitoring program.

RECREATION:

Numerous recreational opportunities are available throughout the year. The lakes provide boating, kayaking, canoeing, tubing, fishing, swimming, and diving opportunities during the summer, and ice fishing in the winter. Hundreds of miles of trails on public and private lands are used for hiking, off-roading, horseback riding, hunting, bird-watching, winter snowshoeing, and cross-country skiing. Emmet County has thousands of acres of State, County, and local parklands.

Emmet County also has an International Dark Sky Park, located in Wilderness State Park, with an observatory (currently not in use) and dark sky events throughout the year for the public.

LINKING AND SCANNING OF STAKEHOLDERS

The CNA/RA Survey was written by the ECD District Manager, with a list of requested information for the survey. Questions were developed to provide a broad survey and increase the likelihood of participation by offering a voucher for the Spring Tree Sale. The CNA/RA was advertised in a Petoskey News Review article. Emails were sent to all ECD customers with a PDF attachment of the CAN/RA Survey. ECD staff and board members handed out surveys to friends, family, acquaintances, neighbors, co-workers. Some surveys were mailed out by request.

STAKEHOLDER LIST

See Appendices

2019 CNA/Resource Assessment Survey Methods

In 2019, the Emmet Conservation District conducted a Resource Assessment (RA), which consisted of a paper survey distributed to and completed by 94 Emmet County residents, landowners, and visitors. The RA was announced on the ECD website (www.emmetcd.org) and ECD Facebook page. The RA survey was available to download as a PDF and paper copies were available at the ECD office.

RA/CNA RESULTS

ECD received 94 individual surveys with responses to the following 19 questions:

1. Zip Code:

SURVEY RESULTS:

Zip Code		City, Twp, Village	County/State
49770	25	Petoskey	Emmet, MI
49740	32	Harbor Springs	Emmet, MI
49769	18	Pellston	Emmet, MI
49706	8	Alanson	Emmet, MI
49755	7	Levering	Emmet, MI
49716	3	Brutus	Emmet, MI
49723	2	Cross Village	Emmet, MI
49718	1	Carp Lake/Bliss/Cecil	Emmet, MI
49796	1	Brutus/Indianville	Emmet, MI
49721	1	Cheboygan	Cheboygan, MI
27106	1	Winston-Salem	Forsyth County, NC
TOTAL	99		

The majority of surveys were completed by Emmet County residents with primary residences in Petoskey, Harbor Springs, Pellston, Alanson, Levering, Brutus/Indianville, Cross Village, Carp Lake/Bliss/Cecil. One survey was completed by a Cheboygan, MI resident, and one was completed from an annual seasonal visitor with a primary residence in Salem-Winston, NC. Note: several individuals listed more than one zip-code.

2. How long have you lived in Emmet County?

SURVEY RESULTS:

How long lived/owned property in Emmet County?	PERCENTAGE
<1 year	2 2%

1-5 years	11	12%
6-10 years	13	14%
11 -25 years	27	30%
26+ years	37	41%
100+	1	1%
TOTAL	91	100%
Longest:	100+ yrs	

Of the 91 responses, the majority (41%) of respondents are long-time Emmet County residents and landowners who lived in or owned property for 26+ or more years, with another 30% respondents in the 11-25-year resident category. The oldest and longest-lived resident has lived in Emmet County for over 100 years.

3. How much property/acreage do you own?

SURVEY RESULTS:

		PERCENTAGE
City Lot:	5	5%
<1 acre	7	10%
1-5 acres	27	29%
6-25 acres	21	23%
26-99	15	16%
100+ acres	7	8%
Rent	4	10%
None:	7	8%
TOTAL	93	109%

Notes: Some owned several properties or lots

This question earned 93 responses, with several respondents indicating ownership of multiple properties or lots. The highest responses (29%) were from landowners with 1-5 acres, followed by landowners with 6-25 acres (23%), 25-99 acres (16%), and 8% owned 100+ or more acres. Residents with city lots accounted for 5% of responses; 10% of respondents were renters; and 8% indicated “none” (not renting and not a landowner).

4. How would you describe your home/property?

SURVEY RESULTS:

		PERCENTAGE
City/Village	26	18%
Rural	32	22%
Residential	31	21%
Farm	16	11%

Seasonal/Recreational/Camp	7	5%
Timber/Forested	19	13%
Lake/River Frontage	10	7%
Vacant/Investment	3	2%
Other	1	1%
TOTAL	145	100%

Note: Some listed more than one category

Several respondents checked more than one category while some respondents did not make a selection at all. Responses varied from city to rural, residential to farms, seasonal/recreation/camps, and waterfront properties. “Rural” accounted for 22% (~1/5) of the responses, followed by 18% in a “City/Village.” The “Residential” category may have not been clear, and many likely thought that the term referred to residential housing communities such as subdivisions, and not just a “home,” since only 21% of responses indicated “Residential.” 11% owned farms; 13% considered their properties to be forested; 7% live on waterfronts of lakes or rivers; 5% listed seasonal/recreational/camp, and a very small percentage (~2%) owned “vacant/investment” properties.

5. Respondents were asked to describe themselves using the following broad categories:

SURVEY RESULTS:

		PERCENTAGE
Homeowner	68	67%
Business Owner	10	10%
Government Official	6	6%
Farmer	5	5%
Student	2	2%
Resource Professional	3	3%
Other/None	7	7%
TOTAL	101	100%

Note: Some listed more than one category

The majority of respondents (67%) were homeowners, followed by business owners (10%), government officials (6%); farmers (5%); resource professionals (3%); students (2%); and 7% did not fit into any category listed and selected “other/None.” Future CNA surveys may want to also include categories such as “Retired; medical professional.” Additional future surveys may want ask respondents whether they are permanent or seasonal residents, work status, work from home or travel regularly for work, marital status, and if they have children, and if so, how many/ages.

6. Respondents were next asked to describe their level of involvement with natural resources.

SURVEY RESULTS:

		PERCENTAGE
Very Involved	36	39%
Somewhat Involved	47	51%
Not Very Involved	10	11%
TOTAL	93	101%

More than half of the responses (51%) indicated “Somewhat involved,” followed by of very involved (39%), and 11% indicating “Not very involved.”

7. Respondents were asked to describe their feelings about natural resources.

SURVEY RESULTS:

		PERCENTAGE
Very Concerned	74	80%
Somewhat Concerned	16	17%
Not Very Concerned	3	3%
TOTAL	93	100%

The majority (80%) were “Very concerned,” with the next largest group (17%) being “Somewhat concerned.” Just a small group of 3 people indicated they were “Not very concerned.”

8. Respondents were asked to indicate which resources that they used to keep informed with news and information about natural resources issues in Emmet County. Multiple answers were allowed.

SURVEY RESULTS:

Online	66
Word of Mouth	65
Newspaper	51
Television	30
Radio	29
Local Meetings	25
Sportsmen’s Organization	20
Farm Organization	13
Other: <i>LTBB/Tribe</i>	6
Other: <i>ECD</i>	3

“Other” included the LTBB Tribe, local enviro groups such as Master Gardeners Association, MDNR and MDEQ list-serve/emails

The digital age has transformed how we get news and information, and accordingly, online was the top resource. Interestingly enough, the next highest responses were “old school” methods - “word of mouth,” followed closely by the “newspaper.”

9. Respondents were asked to select and rank the following land-use issues that they thought would be of importance within the next 5 years:

SURVEY RESULTS:

A. Loss of farmland	High	27	35%
	Medium	44	56%
	Low	7	9%
	TOTAL	78	100%
B. Urban sprawl	High	27	35%
	Medium	44	56%
	Low	7	9%
	TOTAL	78	100%
C. Spread of invasive species	High	71	79%
	Medium	16	18%
	Low	3	3%
	TOTAL	90	100%
D. Preservation of natural areas	High	88	75%
	Medium	23	19%
	Low	7	6%
	TOTAL	118	100%
E. Overuse/poor use of natural or recreation areas	High	37	43%
	Medium	29	34%
	Low	20	23%
	TOTAL	86	100%
F. Local regulations	High	27	31%
	Medium	33	38%
	Low	27	31%
	TOTAL	87	100%
G. Local planning/zoning for growth	High	33	34%
	Medium	40	41%

	Low	25	25%
	TOTAL	98	100%
H. Loss of recreation opportunities	High	24	27%
	Medium	27	31%
	Low	37	42%
	TOTAL	88	100%
I. Local food production/small farm opportunities	High	38	43%
	Medium	35	39%
	Low	16	18%
	TOTAL	89	100%
J. Stormwater infrastructure/management	High	20	23%
	Medium	43	49%
	Low	25	28%
	TOTAL	88	100%
K. Dune Preservation	High	28	33%
	Medium	29	35%
	Low	27	32%
	TOTAL	84	100%
L. Forest Management	High	46	52%
	Medium	33	38%
	Low	9	10%
	TOTAL	88	100%

M. Other Issues or Comments:

- Lake/stream water quality problems; pollution
- Septic and stormwater systems, maintenance, and impacts to water resources
- Drinking water and municipal or community water systems.
- Risk of Line 5 leak
- PCBs and other persistent and harmful chemicals
- Old growth forests
- High quality natural areas
- Local residents commented that do not understand why it is that so many people move to the area for its natural beauty and then cut down the woods, construct huge homes, fence in properties and then plant lawns/turf grass.
- Policy changes; focus/efforts seem to be moving away from natural resources priorities towards economic development.

10. Respondents were asked to select and rank the following water quality issues that they thought would be of importance within the next 5 years:

SURVEY RESULTS:

A. Soil erosion and sedimentation	High	25	28%
	Medium	45	51%
	Low	18	21%
	TOTAL	88	100%
B. Invasive species	High	70	75%
	Medium	21	22%
	Low	3	3%
	TOTAL	94	100%
C. Loss/degradation of wetlands	High	37	44%
	Medium	35	41%
	Low	13	15%
	TOTAL	85	100%
D. Groundwater contamination	High	54	59%
	Medium	27	30%
	Low	10	11%
	TOTAL	91	100%
E. Residential fertilizer/pesticide use	High	48	53%
	Medium	31	35%
	Low	11	12%
	TOTAL	90	100%
F. Groundwater overuse	High	21	24%
	Medium	41	48%
	Low	24	28%
	TOTAL	86	100%
G. Stormwater management	High	18	21%
	Medium	44	51%
	Low	24	28%
	TOTAL	86	100%
H. Shoreline development	High	52	57%
	Medium	30	33%
	Low	9	10%
	TOTAL	91	100%
I. Shoreline armoring/hardening	High	29	34%
	Medium	38	44%
	Low	19	22%
	TOTAL	86	100%
J. Algal blooms	High	30	37%
	Medium	37	46%
	Low	14	17%
	TOTAL	81	100%

K. Lake, river, and stream health	High	72	81%
	Medium	13	15%
	Low	4	4%
	TOTAL	89	100%
L. Water quality	High	74	86%
	Medium	9	11%
	Low	3	3%
	TOTAL	86	100%
M. Agriculture fertilizer/pesticide use	High	42	49%
	Medium	34	40%
	Low	10	11%
	TOTAL	86	100%
N. Surface water degradation/pollution	High	40	48%
	Medium	35	41%
	Low	9	11%
	TOTAL	84	100%
O. Protection of recreational waters	High	41	48%
	Medium	36	42%
	Low	8	10%
	TOTAL	85	100%
P. Agric. cropland drainage protection and management	High	26	31%
	Medium	38	45%
	Low	20	24%
	TOTAL	84	100%
Q. Aquatic herbicide/pesticide use	High	45	53%
	Medium	28	33%
	Low	12	14%
	TOTAL	85	100%
R. Fish quality	High	56	67%
	Medium	22	26%
	Low	6	7%
	TOTAL	84	100%
S. Fish quantity	High	52	62%
	Medium	25	30%
	Low	7	8%
	TOTAL	84	100%
T. Recreational/public access	High	33	39%
	Medium	37	44%
	Low	14	17%
	TOTAL	84	100%

U. Dam removal	High	33	39%
	Medium	37	44%
	Low	14	17%
	TOTAL	84	100%
V. Road/Stream crossings	High	21	26%
	Medium	37	46%
	Low	22	28%
	TOTAL	80	100%
W. Flooding issues	High	9	11%
	Medium	40	48%
	Low	35	42%
	TOTAL	84	101%
X. Loss of shoreline/erosion	High	39	46%
	Medium	30	35%
	Low	16	19%
	TOTAL	85	100%

Y. Other Issues/Comments:

- Shoreline restoration
- PCB's, groundwater contamination, and other persistent chemicals; legacy pollutants/sites.
- Difficult to rank; all are important and related.
- Oil spills.
- Fertilizers
- Pollution. Harbor Beach after parties.
- Invasive species/non-native species affect water quality and ecosystem balance (several)
- Shoreline loss from development and construction; River access due to developments and private ownership.
- Fireworks shows/pollution; lanterns that are released into the air and over water.
- Line 5 pipeline; (concerned) pipelines in the Straits as well as over lands in Emmet and across/through wetlands.
- Septic drainage to lakes, esp. those from older lakefront homes; Septic maintenance education; HIGH concern.
- Wish they left the dam alone [Maple River/former Lake Kathleen dam].

11. Respondents were asked to select and rank the following Wildlife and Habitat issues that they thought would be of importance within the next 5 years:

SURVEY RESULTS:

A. Destruction of wildlife habitat	High	49	58%
	Medium	25	30%
	Low	10	12%
	TOTAL	84	100%

B. Urban sprawl	High	26	30%
	Medium	42	49%
	Low	17	21%
	TOTAL	85	100%
C. Habitat restoration and management	High	36	43%
	Medium	37	44%
	Low	11	13%
	TOTAL	84	100%
D. Loss of public hunting access	High	17	21%
	Medium	24	29%
	Low	41	50%
	TOTAL	82	100%
E. Climate change	High	36	41%
	Medium	19	22%
	Low	32	37%
	TOTAL	87	100%
F. Wildlife damage to property or crops	High	13	16%
	Medium	29	35%
	Low	40	49%
	TOTAL	82	100%
G. Loss of native pollinators	High	58	65%
	Medium	26	29%
	Low	5	6%
	TOTAL	89	100%
H. Habitat Fragmentation	High	27	34%
	Medium	38	47%
	Low	15	19%
	TOTAL	80	100%
I. Wetland preservation	High	38	46%
	Medium	32	29%
	Low	13	16%
	TOTAL	83	91%
J. Open dumps/illegal dumping	High	47	56%
	Medium	25	30%
	Low	12	14%
	TOTAL	84	100%
K. Wetland restoration and management	High	27	33%
	Medium	41	49%
	Low	15	18%
	TOTAL	83	100%
L. Invasive plants	High	60	68%

	Medium	22	25%
	Low	6	7%
	TOTAL	88	100%
M. Invasive insects or other animals	High	55	63%
	Medium	24	28%
	Low	8	9%
	TOTAL	87	100%
N. Wildlife Health and Disease	High	47	57%
	Medium	28	34%
	Low	7	9%
	TOTAL	82	100%
O. Forestry	High	34	42%
	Medium	37	45%
	Low	11	13%
	TOTAL	82	100%
P. Forest Habitat Quality	High	30	37%
	Medium	42	52%
	Low	9	11%
	TOTAL	81	100%
Q. Upland game bird availability	High	17	21%
	Medium	34	42%
	Low	30	37%
	TOTAL	81	100%
R. Bird/songbird habitat/populations	High	31	38%
	Medium	33	41%
	Low	17	21%
	TOTAL	81	100%
S. Monarch butterfly habitat/populations	High	43	51%
	Medium	29	35%
	Low	12	14%
	TOTAL	84	100%

T. Other/Comments:

- Encourage planting native species. CD should stop selling non-native species.
- Chronic wasting disease (CWD), other deer and wildlife diseases; ticks and Lyme disease.
- Education including creating wilderness around developed areas.
- Little farming due to restrictive zoning in West Traverse Twp R-1.

12. What conservation practices or activities do you practice on your land and at home?

SURVEY RESULTS:

- Plant native plants, including monarch gardens (27)
- Recycling practices - Reduce, Reuse, and Recycle (27)
- Water conservation (4)
- Plant trees (15)
- Timber production and forestry management (5)
- Manage invasive species (2)
- Have and maintain birdfeeders (5)
- Participate in Backyard Bird Counts
- Garden (3)
- Composting (12)
- Buy organic food
- Organic at home/pesticide-free (9)
- Preserve natural areas (3)
- Build habitat
- Clean roadside ditches
- Clean shoes before using trails
- River clean-ups; pick up litter; clean up public lands and trails
- Hunt
- No lawns along shorelines; maintaining a natural shelterbelt (2)
- No/Low till
- Raising bees
- Dune preservation/health
- Member of the Pellston Planning Committee
- Alternative energies/off-grid living; energy efficiency/E-efficient appliances (furnace, water heaters)
- Use IPM (Integrated Pest Management)
- Home energy efficiency efforts; Solar lights/LEDs (5)
- Salt reduction and efforts to reduce negative impacts (2)
- Forest Management Plan in place (2)
- Conservancy protection, management (2)
- Rain barrels (4)
- Raise monarch caterpillars, tag and release butterflies
- Grow mushrooms for food (shiitake).
- No Irrigation
- Properly maintain septic field
- Have 80 acres in certified forest and wildlife management program
- Row cropping to reduce soil erosion
- Plant food cover crops for wildlife (7)

13. Respondents were asked to indicate/check boxes to indicate ways that natural resources are used for work, home, or recreational purposes.

SURVEY RESULTS:

- Hunting (53)
- Fishing (60)
- ORV/Snowmobiling (39)
- Wood for heating (38)
- Birding and wildlife watching (66)
- Farming (20)
- Orchard (24)
- Horseback Riding (8)
- Hiking/Biking (59)
- Sailing/canoeing/kayaking (44)
- Timber production (16)
- Swimming (55)
- Well for water (73)
- Gardening (79)
- Wind/Solar energy (11)
- Other: mushrooming (1)

14. Respondents were asked to indicate which programs and services provided by the ECD they were aware of.

SURVEY RESULTS:

- Spring Tree Sale (80)
- Fall Tree Sale (59)
- Habitat/Forestry/Wildlife site visits (27)
- MAEAP services (10)
- Workshops (43)
- Invasive species workshops (8)
- Invasive species site visits (25)
- Invasive species control (32)
- Invasive species volunteering (12)
- ECD website (23)
- ECD Facebook page (14)
- Native Plant Sale (43)
- Presentations (13)
- Other: Vegetation Assurance assistance (5)
- Other: Maple River Clean-Ups (4)

15. Respondents were asked to indicate which programs and services they participated in.

SURVEY RESULTS:

- Spring and Fall Tree Sales (52)
- Habitat/Forestry/Wildlife site visits (8)
- MAEAP services (10)
- Workshops (44)
- Invasive species workshops (8)
- Invasive species site visits (25)
- Invasive species control (11)
- Invasive species volunteering (3)
- ECD website (5)
- ECD Facebook page (5)
- Native Plant Sale (14)
- Presentations (8)
- Other: Vegetation Assurance assistance (3)
- Other: Maple River Clean-Ups (4)
- Annual Dinner Meeting (3)
- None (13)

16. Respondents were asked to indicate what services and programs they felt that ECD should focus on in the next 5 years.

SURVEY RESULTS:

- Invasive species (26)
- Tree sales (8)
- Water quality (8)
- Promote native plants/species (5)
- Presentations and workshops (5)
- Forestry services (4)
- Site visits (3)
- Stormwater management (3)
- Wetland protection (2)
- Promote pollinators (2)
- Soil sampling
- Farmland preservation
- Pesticide education
- Climate change
- Wildlife
- Habitat protection
- Restoration projects
- Keep up the great work

17. Respondents were asked to note any additional programs, services, or activities that ECD should ECD add to help you, your land, and community.

SURVEY RESULTS:

- Local clean-ups
- Forestry programs
- Planting programs/projects
- Certification programs for natural resources
- Soils/dune workshop
- Invasives control
- Education/outreach/workshops
- Removal of Line 5 pipeline
- Continue to provide natural resource information
- More announcements/advertising
- Advocate for preservation of natural areas, habitat quality, recreational opportunities/access
- Water testing
- Soil testing

18. Would you support a millage to assist with operations to allow ECD to continue to provide services.

SURVEY RESULTS:

- Yes (39)
- Depends on amount (42)
- No (6)
- No answer (7)

Additional comments:

- Need innovative ways to get funding and marketing for increased visibility
- Very happy with the current services provided
- Hope to attend future workshops

19. List additional comments or resource concerns not addressed in this survey.

SURVEY RESULTS

- Swag/giveaway items to promote ECD
- Millage wording is important
- Thank you for all you do (4)
- Increased publicity/marketing

- More of these programs need public attention
- Need to figure out how to keep Styrofoam out of landfill/waste stream

PRIORITIZED LIST OF RESOURCE CONCERNS

Methods to Prioritize:

This CNA/RA is intended to identify the most critical issues and prioritize them by ranking (1=most important, 5=least important), and those issues and priorities will guide the ECD's Strategic Plan.

To prioritize issues, ECD utilized the information gained from the CNA/RA survey. The highest priority issues identified in the CNA//RA and their rankings based on survey responses are as follows:

- Invasive species (26) RANK: 1
- Tree sales (8) RANK: 2
- Water quality (8) RANK: 3
- Promote native plants/species (5) RANK: 4
- Forestry services (4) RANK: 5

First Resource Problem/Concern

Invasive species - Invasive species cause many problems including economic impacts (costly), habitat degradation, loss of native species and native biodiversity.

Second Resource Problem/Concern

Tree Sales/Workshops - Tree sales are not a problem, but was identified as important

Third Resource Problem/Concern

Threats to water quality – Local water quality is generally very good, and people want to keep it that way, and find ways to decrease threats to water quality.

Fourth Resource Problem/Concern

Promote native plants/species – Native species are at risk from a number of factors, and there is a lack of main-stream focus on promoting native species instead of non-native and potentially invasive species.

Fifth Resource Problem/Concern

Forestry resource needs, challenges, and services– Many threats to forest health exist and there is a need for more local forestry assistance.

