2016 Natural Resources Assessment for Somerset County, Maine

Prepared by:
Somerset County Soil & Water Conservation District

In partnership with:
Maine Association of Conservation Districts (MACD)
USDA Maine Natural Resource Conservation Service (NRCS)

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Preface

The Somerset County Natural Resource Assessment is a cooperative project of the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS), the Maine Association of Conservation Districts (MACD), and the Somerset County Soil & Water Conservation District. This document is not intended to be an exhaustive survey of all natural resource conditions in the District. However, it is a snapshot of current issues and conditions which are significant to the Somerset County Soil & Water Conservation District in its work with NRCS and other conservation partners.

Somerset County SWCD gathered feedback through MACD's web-based survey and through one public meeting held in the towns of Skowhegan. Input, responses, and feedback were collected from federal, state, and local departments and agencies, conservation organizations working in our area, county and town representatives, local leaders, and concerned residents. Data and input was also collected from partners, county committees, and through public events.

Overview

Somerset County

Covering 3,926.50 square miles Somerset County is the third largest county in the Maine. It is bordered to the West, Northwest, North, West, and South by Franklin County, Province of Quebec, Aroostook County, Piscataquis County, Penobscot County, Waldo County, and Kennebec County respectively. There are 33 communities as well as 82 Unorganized Townships in Somerset County that offer the tranquility of a rural lifestyle coupled with many of the amenities of a more suburban setting in our four largest communities.

The County's population is currently estimated at 51,113 residents – ranking 9th in the state – Somerset County mirrors Maine's overall demographic; approximately 20% of the population is under 18 years of age, about 19% are 65 years old or older, and 50% of the county population is female[1]. The southern ¼ of the county contains most of the population as well as well as nearly all the agricultural activity: dairy, hay, corn, and mixed vegetables. The northern ¾ of the county is comprised mostly of commercial timberlands which provide wood products and maple syrup production.

Somerset County is the gateway to the mountains, lakes, rivers and forests of western Maine. Maine's four seasons offer opportunities to experience skiing, fishing, white water rafting, hiking, snowmobiling and many other outdoor activities. The Kennebec River flows South through the lower half of the County running through the larger communities and is an important component of the region's history and current culture.

[1] US Census Bureau 2016 - http://www.census.gov/quickfacts/table/PST045215/23025,00

In 2007 there were 564 farms that contained 111,371 acres, and by 2012 had increased to 579 farms containing 140,045 acres.[2] Dairy is the primary farming activity with Somerset County ranking 3rd in the state for milk production. The top crop at 20,877 acres is forage-land (hay, haylage, grass silage, and greenchop) which is mostly used to support the dairy industry. [2] The four next crops are: corn for silage (4560 acres); corn for grain (864 acres); vegetables harvested (316 acres); and apples (200 acres).[2] Over the recent decade the number of small diversified vegetable producers has increased to meet the growing demand for locally grown and produced foods. Agriculture in the region, however is secondary to forestry and maple syrup production in terms of acres or economic impact.

Given the extensive forestland throughout Somerset County, forest products are a major economic component of the economy. Forest products include: sawlogs, pulpwood, biomass, and maple syrup. The paper and pulp industry was, until recently, driven by the SAPPI Somerset Mill in Skowhegan and Madison Paper in Madison. The Madison Mill has recently closed which has decreased the demand for softwood pulp which will negatively impact the forest industry affecting loggers to woodland owners. Export of raw wood products to neighboring counties and into Canada also occur. Somerset County is the largest producer of maple syrup in Maine and the highest producing county in the United States. Sugaring operations range from a few acres to thousands of acres, with the largest operations in the Unorganized Townships in the northern section of the county.

[2] 2012 Census of Agriculture - USDA

Resource Assessment Summary

Concerns of High Importance

Landscape	**Natural Resource Concerns**	**Specific Issues**
Non-irrigated Cropland	Soil Erosion - Sheet, rill, and wind erosion; Concentrated flow erosion	Soil erosion occurs on cropland across the entire area; more significant on steep and long slopes and land with little vegetative cover
	Soil Quality Degradation - Organic matter depletion	Insufficient/Ineffective use of cover cropping, winter cover crops, and crop rotations
Irrigated Cropland	Insufficient use of irrigation water; Inefficient moisture management.	Need for more efficient pumps, piping, and water delivery devices to minimize waste of water and energy resources.
	Water Quantity – Changes in seasonal hydrologic cycle due to climate change	Uncertainty of existing irrigation sources (wells, springs, farm ponds) operations and availability in future years.
Hay and Pasture	Soil Quality Degradation - Organic matter depletion; Water Quality Degradation - Excess nutrients	Insufficient/Ineffective use of manure on farms to increase soil fertility and crop yields. Many nutrient management plans are in need of review.

Forest	Invasive plant spread; Inadequate structure and composition; Inadequate Habitat for Fish and Wildlife	Need more forest management planning, especially inclusion of wildlife habitat planning, invasive plant control measures, and best management practices
	Invasive forest pest spread; inadequate structure and composition; Inadequate Habitat for Fish and Wildlife	Need more forest management planning, especially inclusion of wildlife habitat planning, invasive forest pest control measures, and best management practices
Headquarters, Farmsteads, Concentrated Livestock Areas	Water Quality Degradation - Excess nutrients and sediment	Runoff from heavy use areas and concentrated livestock areas enters surface and groundwater carrying excessive amounts of organic nutrients
	Soil Quality Degradation – Organic matter depletion	Insufficient/Ineffective use of manure on farms to increase soil fertility and crop yields
	Disease Occurrence and Transmission	Farm Biosecurity measures and plans are infrequently considered or developed
Urban	Water Quality Degradation; Excess Water; Soil Erosion - Concentrated flow erosion;	Untreated storm water runoff entering water bodies
Water	Water Quality Degradation - Excessive nutrients in surface waters	Runoff, often containing sediment and nutrients (phosphorus), from land is entering surface waters; leading to eutrophication and seasonal algal blooms.

	Water Quality Degradation; Excess Nutrients & Water; Soil Erosion - Concentrated flow erosion;	Forestry and agriculture activities near waterways which do not utilize BMPs.
	Water Quality Degradation; Excess Nutrients & Water; Soil Erosion - Concentrated flow erosion;	Development of shoreland areas which degrades water quality through loss of large vegetative buffers, improperly installed and maintained gravel roads, installation of septic systems, and use of fertilizers and chemicals.
Wildlife Habitat (Terrestrial & Aquatic)	Inadequate Habitat For Fish and Wildlife - Habitat degradation	Deer wintering areas (DWAs) are inadequately managed need to be included in greater detail in forest management plans
	Inadequate Habitat for Wildlife – Limited Early Successional Habitat	Lack of mixed stand management limits continuous availability of habitat for dependent wildlife species
	Inadequate Habitat for Wildlife – Limited Late Successional Habitat	Lack of mixed stand management limits continuous availability of habitat for dependent wildlife species
	Inadequate Habitat For Fish and Wildlife – Lack of Aquatic Organism Passage (AOP)	Lack of connectivity between waterbodies impacts fish movement to seasonal refugia and disrupts gene flow.
	Habitat Management for Rare, Endangered, and Threatened Species- Canada lynx, Northern long-eared bat, and sea-run Atlantic salmon	Protection and management of habitat for life functions.

Non-Irrigated Crop Landscape

Overview of Landscape

Cropland in Somerset County is located primarily in the southern ¼ of the county and most of this cropland is utilized by the local dairy farmers. The reported total harvested cropland in 2012 was 27,283 acres of which 20,877 were forage –land (all hay, haylage, grass silage, and greenchop), 4,560 were corn for silage, 864 were corn for grain, 316 was vegetables, and 200 were apples.[3]

Critical Current and Future Issues

- Cropland
    - Erosion control
    - Continuous corn practice
    - Low organic matter and associated impacts
    - Nutrient losses, runoff, water quality impacts (surface and groundwater)
    - Top soil loss
    - Need for high tunnels to extend season
    - Conversion to development in Fairfield area
    - Some competition of cropland
- River bottom fields
    - Loss of riparian buffers
    - Loss of land to erosion
- Invasives
    - Oriental bittersweet, shrubby honeysuckle, Japanese barberry, knotweed
    - pests

Opportunities for NRCS and SWCD involvement for the next 5 years

- Continue cropland enhancement practices and expand opportunities to provide practices for improvement of soil health, erosion, soil loss, etc. These practices include winter cover cropping, interseeding, and crop rotations.
- Continue nutrient management planning practices and technical support.
- Expand high tunnel practices/program to extend the growing season plus monitor how this effort helps prevent invasives under a more controlled environment. Explore possible use of high tunnels of various sizes, configurations, and with mechanical features.
- Continue to promote events, trials, and market development for small grain production.
- Technical assistance, educational opportunities/outreach/workshops to assist with erosion issues, loss of top soil, etc.
- Promote crop and soil health by offering Certified Crop Advisor (CCA) technical assistance. Also CCA assistance for recommendations on pesticide application, organic options for invasives/pests, etc.
- Adopt emerging technology for specific needs as they arise and support new opportunities for diversifying crops.

[3] 2012 Census of Agriculture - USDA

Irrigated Crop Landscape

Overview of landscape

Irrigated cropland is very limited in Somerset County currently. Orchards, soft fruit and specialty fruit producers, plus some small scale vegetable producers are the primary users. While total cropland acres total just over 30,190 acres only 60 are reported in the 2012 Ag Census as irrigated[4]. The reported irrigated acres has decreased approximately 42% from the 2007 value of 104 acres.[5]

Critical Current and Future Issues

- Climate change and its potential impacts to seasonal hydrologic cycle.
- Increase in specialty / niche crops which may require
- Increase in marketing and sale of crop – medium and small scale
    - Community Supported Agriculture (CSA's) – countywide
    - Vibrant local farmer's markets – countywide
- Innovative agricultural practices (i.e., high tunnel) which require irrigation for production.

Opportunities for NRCS and SWCD Involvement in the next 5 years

- Provide information and outreach on emerging practices and opportunities for small scale growers using high tunnel and similar covered systems.
- Explore opportunities that target priorities expressed by specialty/niche growers.
- Ongoing awareness of area farms/farmer's needs (i.e., crop diversification and/or possible irrigation requirements)

Hay and Pasture

Overview of Landscape

Hayland / Pasture acreage – measured to include forage, hay, haylage, grass silage, and greenchop – makes up approximately 20,877 acres[6]. The vast majority of hayland and pasture acres are located in the southern third of the county.

Critical Current and Future Issues

- Rotational grazing/prescribed grazing
    - Fencing
        Multi-species needs
    - Watering facilities

- Conversion
    - Trees, development and green houses

[4] 2012 Census of Agriculture – USDA
[5] 2007 Census of Agriculture - USDA
[6] 2012 Census of Agriculture – USDA

- Lack of financial resources to improve fertility
    - Have local farmer build up soils with cropping
- Invasives
    - Bedstraw
- Lower fertility and poor biological health
- Maintain rural character
- Short season
- Distant fields get less fertilizer

Opportunities for NRCS and SWCD involvement for the next 5 years

- Continue to promote USDA program delivery to assist in maintaining existing hay and pasture acres (NRCS-EQIP, GRP, etc.).
- Organize/promote educational opportunities and outreach such as pasture walks
- Host/assist with workshops and/or outreach addressing pertinent and emerging issues
- Promote pasture/hay health by offering Certified Crop Advisor (CCA) technical assistance. Also CCA assistance for recommendations on amendments, organic options for invasive plants/pests, etc.
- Research and support tests of alternative grasses and legumes for cool climate

Forest Landscape

Overview of Landscape

Forestland is the most dominant land cover in Somerset County accounting for 2,369569 acres, which is 90.4% of the county's total terrestrial area.[7]

Much of the forestland north of the Town of Bingham, is owned and operated as commercial forests which are managed for wood product harvesting, i.e. sawlogs, pulpwood, and biomass. The District and NRCS do not typically work with these large forestland owners in either cost-share programs or outreach/education. Activities by the District and NRCS are focused on privately owned forestlands that range in size from 25 – 500 acres which are mostly associated with farms or private residences. Through State and Federal funding, technical assistance and educational programs have assisted in helping forestland owners manage their acreage.

Leading the nation in sap/syrup production, it isn't surprising that sugar maple ranks highest in the forest species acreage, at 45.2%. Spruce and fir are second; 37%[8]. Maple sap, logging, paper

[7] Maine Forest Service EVALID data – Somerset County Land and Forest Resources
[8] Maine Forest Service EVALID data – Somerset County Land and Forest Resources

and pulp and, increasingly, biomass (manufactured wood products for fuel – i.e., wood pellets) make up the largest economic aspects of the Somerset County forestland.

Partners in Somerset County that assist landowners with education, projects, and woodland management include:

- ***Maine Forest Service (MFS)*** – district forester providing onsite assistance to woodland owners, workshops, educational materials (forest pests, market trends, etc.).
- ***Maine Natural Areas Program (MNAP)*** - assistance to landowners, workshops, and educational workshops.
- ***Small Woodland Owners Association of Maine (SWOAM)*** – meetings, workshops, and support to small woodlot owners.
- ***University of Maine Cooperative Extension*** – assistance with insect pests, invasive plants, and education.
- ***Maine Department of Inland Fisheries and Wildlife (IF&W)*** – assistance to landowners in regards to deer wintering areas (DWAs) management and forestry management as it relates to wildlife habitat.

Critical Current and Future Issues

- Changing markets for wood products. Due to recent paper mill closures in Maine and decreased demand for biomass there is a significant decrease for softwood pulp/biomass. This loss of demand impacts forestry practices such as thinning and development of early successional habitat development. Negatively impacts the potential for revenue generating activities by small woodland owners.
- Invasive Forest Pests – Though not present in Maine, concerns about the potential spread of emerald ash borer and Asian longhorned beetle. Also continued monitoring for winter moth, brown-tailed moth, and hemlock woolly adelgid which are not currently in Somerset County but in limited locations in coastal and central Maine.
- Invasive Plant Species - Concerned about presence and spread, with focus on shrubby honeysuckle species, oriental bittersweet, and Japanese knotweed.
- Protection of water resources during harvest activities: sedimentation into waterbodies and small stream and wetland crossings.
- Increase stewardship activities (self-completed or contracted out) of private woodland owners in order to meet forest management plan goals/objectives.
- Increase wildlife habitat activities through developing complexity within woodlands, i.e. mixed stand ages, species composition, early successional habitat, and late successional habitat).

Opportunities for NRCS and SWCD involvement for the next 5 years

- Increase the District's involvement with forestry management through coordinating education/outreach efforts with partner organizations, agencies, and adjacent Districts.
- Continue to promote and highlight emerging and existing information on forest management practices
- Continue to provide information, outreach, and workshops to educate woodland owners of forest pests and invasive plant species that threaten forest health and management. Work with MFS, SWOAM and UMaine Extension in these efforts.
- For invasive plant species develop programs for public that demonstrate effective practices for containing and/or eradicating species from woodlands.
- Incorporate wildlife habitat and water quality practices into forestry activities in order to promote understanding and stewardship by woodland owners

Headquarters/Farmsteads/Concentrated Livestock Areas

Overview of Landscape

Somerset County has 58 dairy farms, 108 beef farms, 154 cattle/calf farms, ranking second in Maine in number of dairy farms, third in the state with the number of dairy cows, and forth in the state for beef farms.[9]

Headquarters/Farmsteads/Concentrated Livestock Areas are priorities not only for Somerset County dairy and livestock producers, but for the county as a whole. Many farms are located near streams, rivers, and ponds, prompting ongoing concerns about manure management. Primarily, these areas are located in the southern part of the county, as is most of the population. With 140,371 acres being farmed[8], the concern of air and water quality is significant.

The headquarters/farmstead of the operations are typically where the farmer and family reside, as well as areas where farm equipment is stored. Fuel and vehicle fluids, as well as feed, fertilizer and pesticides are commonly stored in the area, as well.

Concentrated livestock areas, where animals congregate, create challenges with manure management. Stacking and/or storage of animal waste, plus silage leachate, is an issue. While many of the farms utilize manure storage pits to minimize nutrient runoff, commonly these areas are undersized or in need of retrofits. Somerset County ranks 3rd in Maine for total acreage that manure is applied to, 10,349 acres.[10] This means that the development and implementation of effective manure storage facilities and nutrient management plans are necessary for the protection of water resources and improvement of nutrient budgeting on hayland, pasture, and cropland.

Milk room waste water creates a need for drainage, as does roof runoff for managing the rainwater coming from barns, storage facilities, and outbuildings. Energy costs for

[9] 2012 Census of Agriculture - USDA
[10] 2012 Census of Agriculture - USDA

heating water are a major expense and most dairy farmers are seeking options that will minimize the cost.

Heavy use areas are characterized as livestock congregating and travel areas, truck off-loading, etc. While these concrete areas aid in minimizing erosion issues, some have identified that the animal waste runoff from heavy use areas could be an issue.

Critical Current and Future Issues

- Adequate sizing of manure storage and handling facilities.
- Protection of surface water and ground water resources from degradation (excessive nutrients and sediment) due to stormwater run-off.
- Implementation of on farm use plans for manure to increase soil fertility and crop yields.

Opportunities for NRCS and SWCD involvement for the next 5 years

- Support opportunities to provide options for energy efficiency.
- Continue to support Comprehensive Nutrient Management Plans (CNMPs) and Nutrient Management Plans (NMPs)
- Review needs for manure storage
    - Retrofits / re-sizing of existing manure storage

  Encourage vegetative areas at heavy use areas to help filter runoff

Urban

Overview of Landscape

Somerset County is a very rural, with most of the population in the southern third of the county, below the Town of Bingham. The two largest towns in the county are Skowhegan with a population of 8,478[11], and Fairfield with a population of 6,542[9]. Regardless of population size, these towns and others located in the county have concentrated areas of residential, commercial, and industrial development which contain impervious surfaces and concentrate storm runoff to adjacent waterbodies, often transporting chemical contaminants.

Critical Current and Future Issues

- Stormwater runoff from streets, parking lots, residences, and other impervious surfaces drain untreated into waterways.
- Lack of planning for undeveloped corridors to allow for wildlife movement through developed areas.

[11] US Census Bureau 2016 - http://www.census.gov/quickfacts/table/PST045215/23025,00

Opportunities for NRCS and SWCD involvement for the next 5 years

- Outreach opportunities for updated Best Management Practices, local involvement, workshops, and additional education on how to manage urban conservation concerns.
- Support projects seeking funding for watershed improvements.
- Communication with Somerset County Commissioners about the updated legislation for storm water management.
- Partner with watershed groups, conservation committees, and others to remain informed on development issues and their impact on water resources.

Water Resources

Overview of Landscape

Water resources are abundant throughout Somerset County. The Kennebec River Watershed covers much of the county, with the Dead River, Moose River, Sandy River, and Carrabassett River being major tributaries. The headwaters of the Penobscot River and the St. John River are located in the northern portion of the county. Numerous lakes, ponds, and reservoirs as well as thousands of miles of streams are found throughout the county. Given the vast tracts of industrial woodlands and low population the development of shoreland areas is low with areas of higher concentrations limited to waterbodies in the far southern portions of the county. These water resources provide for a wide variety of recreational activities for residents and visitors alike. Activities include: fishing (open water and ice), boating, canoeing, kayaking, and whitewater rafting. Many businesses rely on Somerset County's waters: whitewater rafting operations, fishing guides, campgrounds, cabin rentals, restaurants, etc.

Ground water use and protection is very important to most residents as they rely on wells for potable water at their residence or business. Additionally, Poland Springs extracts groundwater from several locations within Somerset County for use in their bottled water sales.

Seasonal and recreational usage to Somerset County watersheds, in addition to increased development, has created new pressures. Agriculture and foresting practices along shorelines have contributed to erosion and runoff issues that have created concerns and issues for Somerset County waters.

Critical Current and Future Issues

- Development of shoreland areas which degrades water quality through loss of large vegetative buffers, improperly installed and maintained gravel roads, installation of septic systems, and use of fertilizers and chemicals.
- Forestry and agriculture activities near waterways which do not utilize BMPs.

Opportunities for NRCS and SWCD involvement for the next 5 years

- Continue to work with landowners to reduce the negative impact of agricultural production to watersheds.
- Work with municipalities and landowners to replace water crossings (culverts and bridges) with properly designed structures that adequately pass stormflows and provide Aquatic Organism Passage (AOP).
- Continued partnerships with conservation agencies, committees, and departments to address issues such as erosion control, sedimentation, development, etc.

Wildlife Habitat (Terrestrial and Aquatic)

Overview of Landscape

With extensive undeveloped/lightly developed forestland and waterbodies Somerset County contains diverse terrestrial and aquatic wildlife habitats, that support species such as moose, bear, whitetail deer, Canada lynx, ruffed grouse, bald eagle, and brook trout to name a few. Much of the forests are comprised of younger aged stands that provide habitat and forage for species such as ruffed grouse, snowshoe hare, moose and Canada lynx. Current forest management practices on much of the industrial forestlands allows for the presence of young, dense softwood stands providing ideal habitat for snowshoe hares which is the primary prey item for Canada lynx, a federally listed threatened species.

However, increased development and land use has the potential to degrade and fragment habitat. Deer wintering areas (DWAs) are of significant importance throughout the county, especially in the northern two thirds of the county where winter severity is increased (depth of snowpack, duration of snowpack, and low average winter temperatures).

Due to the abundance of waterbodies throughout the county aquatic habitat provides for diverse communities. The Kennebec River maintains a small population of sea-run Atlantic salmon which are federally listed as endangered under the Endangered Species Act (ESA). Sea-run Atlantic salmon restoration efforts by state and federal agencies are currently focused on the Sandy River watershed with efforts on the mainstem Kennebec addressing upstream and downstream passage at hydroelectric facilities. Much of the southern half of the county is denoted as critical salmon habitat. The headwaters for the Penobscot River in the far northern section of the county are also listed as critical salmon habitat for the restoration efforts that are occurring within that watershed.

Maine has 97% of all remaining habitat for Eastern brook trout which includes stream and pond habitat. Brook trout are abundant throughout the county's waters and are sought after by resident and non-resident anglers. Based upon the Maine Department of Inland Fisheries and Wildlife list of State Heritage Fish Waters, Somerset County

accounts for 23% (130 of 563)[12] of all wild/native brook trout ponds and lakes found in the state. These waters contain self-reproducing populations of brook trout and have either been never stocked or not stocked for more than 25 years. Additionally Maine contains the only existing native populations of Arctic charr in the continental United States and one of those waters, Penobscot Lake, is located in northern Somerset County.

The continued presence of such numerous populations of wild brook trout in lakes, ponds, streams, and rivers is due to the undeveloped nature of the county and management activities of the Maine DIFW. In order to maintain these brook trout populations there needs to be continued protection of these waterbodies through proper use of forestry BMPs, regulated development, and protection from non-native fish introductions.

Critical Current and Future Issues

- Lack of concerted efforts to focus on management of Deer Wintering Areas
    - No regulatory protections in organized or unorganized townships

- Aquatic Organism Passage (AOP) - Identifying and replacing stream crossing structures that impair or impede passage.

- Providing habitat diversity:
    - Early successional habitat
    - Late successional habitat
    - Riparian area protection

- Threatened/Endangered species restoration and habitat management
    - Sea-run Atlantic salmon
    - Canada Lynx
    - Northern long-eared bat

- Maintaining wild populations of Eastern Brook Trout in lotic and lentic environments.
    - Water Quality
    - BMPs
    - Fish Passage (AOP)
    - Non-native fish

Opportunities for NRCS and SWCD involvement for the next 5 years

- Work with State and Federal agencies to promote awareness of the importance of sustaining both terrestrial and aquatic wildlife habitat.

[12] Maine Dept., IF&W website – January 2015 list

- Continue to monitor Land Use Planning Commission meetings and applications – awareness of development and land use changes in the Unorganized Territories.
- Work with local agencies and conservation partners to support workshops, conferences, and events that stress the importance of wildlife habitat
- Promote area projects that demonstrate best management practices for wildlife habitat protection and development.
- Work with the foresters and landowners to promote options, best management practices for wildlife habitat in forest management plans
- Develop education and outreach events that instill stewardship principles in private landowners for development and maintenance of wildlife habitats, especially on providing habitat diversity
- Continue staff professional development in wildlife habitat development, maintenance, and diversity.

Stakeholder Input

Web-based Survey

The Maine Association of Conservation Districts (MACD) developed an online public survey to assist in gathering public input on natural resource issues throughout Maine. The survey was an "open invitation" type that did not limit respondents to a defined group of individuals. The target audience for the survey was meant to include all citizens in Maine, ranging from non-property owners, to forestland owners, to farmers, and natural resource professionals. The public was made aware of the survey through a variety of media means: 1) press releases from MACD, individual Districts, NRCS Maine Office; 2) websites/electronic newsletter articles from Maine Department of Agricultural, Conservation, and Forestry, Small Woodland Owners Association of Maine, individual Districts, and University of Maine Cooperative Extension; 3) radio; and 4) direct emails to natural resource based organizations.

The online survey was developed using Survey Monkey™ software and consisted of 11 questions of statewide focus and the twelfth question asked in which county the respondent's residence/property was located. Once a county was selected in Question 12, the respondent would either be directed to questions specific to that county before ending the survey or if the county selected had no questions would be directed to the ending of the survey.

Though the survey was designed as an online survey, individuals could request a paper copy of the survey and then return it to the District Office it was received from. Completed paper surveys would be entered into the electronic database by District staff. The survey was open from February 1 through March 31, 2016. A total of 888 surveys were completed, with 885 completed online and 3 completed on paper. Table 1 breaks down the respondents by county.

Table 1. Survey respondents by county. (*Total = 771 answered, 117 declined to answer.*)

County	Number of Respondents
Androscoggin	30
Aroostook	59
Cumberland	93
Franklin	32
Hancock	59
Kennebec	108
Knox	40
Lincoln	32
Oxford	46
Penobscot	63
Piscataquis	25
Sagadahoc	21
Somerset	38
Waldo	49
Washington	43
York	33
TOTAL	**771**

Summary of Statewide and Somerset Responses

Question 1

Respondents were asked to what are the most important issues in their county as they relate to maintaining of the soil, water, and forests. The five most important issues identified in order of importance were:

ISSUE	STATE RANK	SOMERSET RANK
Lake/stream watershed management and/or protection	1	1
Pesticide and fertilizer use	2	2
Ground water management and/or protection	3	
Soil erosion management	4	
Soil health management (Agricultural practices)	5* (tied)	3
Invasive aquatic plant management	5* (tied)	
Invasive Forest Pest Management		4
Invasive Terrestrial Plant Management		5

Question 2

Respondents were asked what they thought had the greatest impact on water quality in their county. The five most important issues identified in order of importance were:

ISSUE	STATE RANK	SOMERSET RANK
Shoreline residential development	1	1* (tied)
Residential/commercial landscaping (run-off, erosion, pesticide use, etc.)	2	4
Management of run-off, erosion, pesticide use, etc. on farms greater than 50 acres	3	1* (tied)
Open spaces converted to commercial space	4	3
Management of run-off, erosion, herbicide use, etc. on larger woodland harvest (greater than 100 acres) primarily for timber sales	5	2
Urban water stormwater run-off		5* (tied)
Impacts on water temperatures due to timber/vegetation removal along waterways		5* (tied)

Question 3

The survey asked respondents which issues they considered to be the most important to agricultural, forestry, and water resources in Maine. The five most important issues identified in order of importance were:

ISSUE	STATE RANK	SOMERSET RANK
Management of pesticide, herbicide, insecticide, and fungicide use to limit effects on the natural and human environment	1	1
Development/refinement of sustainable agriculture and forestry practices	2	4* (tied)
Invasive species (Managing invasive species to limit effects on water quality, wildlife habitat, agriculture, and forestry)	3	4 (tied)
Conversion from farm and forestland to commercial/residential	4	5
Protect/enhance wildlife habitat	5	3
Agriculture and forestry impact on water quality		2

Question 4

Respondents were asked what the 5 most important products, programs, or services that the Soil & Water Conservation Districts could assist them with. The top five were:

ISSUE	STATE RANK	SOMERSET RANK
Water Quality Protection	1	3* (tied)
Education and Outreach	2	2
Erosion and sediment control	3	4
Wildlife Management, focus on habitat	4	3* (tied)
Conservation Planning	5	
Forestry programs		1
Financial assistance (USDA- Natural Resource Conservation Service cost share programs)		5

Question 5

This question asked respondents to assign importance to the degree of management concern for listed invasive plant species. For this question invasive species were defined as non-native species that cause economic or environmental harm to natural landscapes, or are harmful to human health. The five invasive plant species of greatest concern were:

INVASIVE PLANT SPECIES	STATE RANK	SOMERSET RANK
Japanese knotweed (*Fallopia japonica*)	1* (tied)	1
Purple loosestrife (*Lythrum salicaria*)	1* (tied)	2
Oriental bittersweet (*Celastrus orbiculatus*)	2	5
Shrubby honeysuckle (*Lonicera tatarica, L. morrowii*)	3	3
Multiflora rose (*Rosa multiflora*)	4	
Japanese barberry (*Berberis thunbergii*)	5	
Burning bush or Winged euonymus (Euonymus alatus)		4

Question 6

Respondents were asked to rank a list of invasive forest pests, both species that are currently in Maine or those in nearby states. For this question invasive species were defined as non-native species that cause economic or environmental harm to natural landscapes, or are harmful to human health. The five invasive forest pest species of greatest concern were:

INVASIVE FOREST PEST	STATE RANK	SOMERSET RANK
Emerald ash borer	1	1
Hemlock wooly adelgid	2	3

Asian long-horned beetle	3	2
Gypsy moth	4	
Hemlock scale	5	5
Winter moth		4

Question 7

In an attempt to understand the percentage of farmers that were completing the survey, respondents were asked to select the type of landowner they were from the provided list. Farmers, all farm categories combined, made up approximately 22% of the total respondents. The largest group of individuals taking the survey were *Non-farm year-round residence*, 55.8% of total respondents. Interestingly the 2nd highest response category was *Other* at 14.3% (111 respondents). Likely this is a result of how individuals read the specific categories offered and felt none provided an appropriate description of the type of landowner they were. In reviewing the descriptions provided by respondents the majority fell into the following categories: Non-Farm Year-Round Residence; Farm-Diversified; Homestead/Personal Farm; Tree Farmer/Woodland Owner; and Land Trust/Resource Professional.

LANDOWNER CATEGORY	STATEWIDE	SOMERSET
Non-farm year-round residence	55.8%	28.9%
Non-farm seasonal residence	2.3%	10.5%
Non-farm woodland owner that does not reside on the property	5.4%	15.8%
Farm - Dairy	0.8%	2.6%
Farm – Fruit/Vegetable	8.9%	7.9%
Farm – Meat (Beef, Poultry, Swine, etc.)	2.4%	0%
Farm - Fiber	0.6%	0%
Farm - Diversified	6.3%	5.3%
Farm - Haylands	2.2%	5.3%
Farm – Maple syrup production	0.9%	0%
Other	14.3%	13.1%

Question 8

Respondents were asked if their property contained any woodlands, defined as land that contains growing trees of any size, with 86% (statewide) and 92% (Somerset) responding that their property did contain woodlands. Of those with woodlands on their property 44.5% (statewide) and (Somerset) contained less than 10 acres while 55.5% (statewide) and (Somerset) contained 10 acres or more.

Question 9

Respondents were asked if their property contains any frontage on a waterbody. 34% (statewide) and 26% (Somerset) responded that their property did not contain any

frontage on a waterbody. Of the remaining 60% (statewide) and 74% (Somerset) of respondents that had frontage on a waterbody Table 2 highlights the type of waterbodies encountered.

Table 2. Waterbodies associated with properties of survey respondents, both statewide and Somerset County.

TYPE OF WATERBODY	STATEWIDE	SOMERSET
Stream	61.3%	82%
River	21.1%	17.9%
Pond/Lake	30.8%	28.6%
Ocean/Marine	8.8%	0%
Marsh/Wetland	33.6%	21.4%

Question 10

Respondents were asked how many acres of land they owned, leased, or managed. Table 3 summarizes the answers to the question.

Table 3. Overall acreage of properties owned/leased/managed by survey respondents, both statewide and Somerset County.

ACREAGE	STATEWIDE	SOMERSET
Less than 1 acre	17.1%	10.5%
1 – 5 acres	22.1%	18.4%
6 – 25 acres	18.3%	10.5%
26 – 100 acres	18.2%	28.9%
101 – 500 acres	16.7%	28.9%
More than 500 acres	7.6%	2.6%

Somerset County Stakeholder Meeting

Somerset County Soil & Water Conservation District held a public meeting on Thursday, March 31, 2016 from 6-8pm at the University of Maine Extension Office in Skowhegan. Only one individual, District Forester-Maine Forest Service, was the sole attendee. The low turnout for the meeting was unanticipated as the meeting was advertised on the District and MACD websites, 300+ individuals on the District's mailing list were emailed with the meeting information, and 40+ natural resource professionals and county staff were personally invited to the meeting through an email announcement.