OUTDOOR SUMMER WATER CONSERVATION IN THE IPSWICH RIVER WATERSHED: COMMUNITY-BASED SOCIAL MARKETING BENEFIT AND BARRIER RESEARCH

Massachusetts Department of Fish and Game
Division of Ecological Restoration
Invested in Nature and Community

Michelle Craddock, Watershed Ecologist
Division of Ecological Restoration

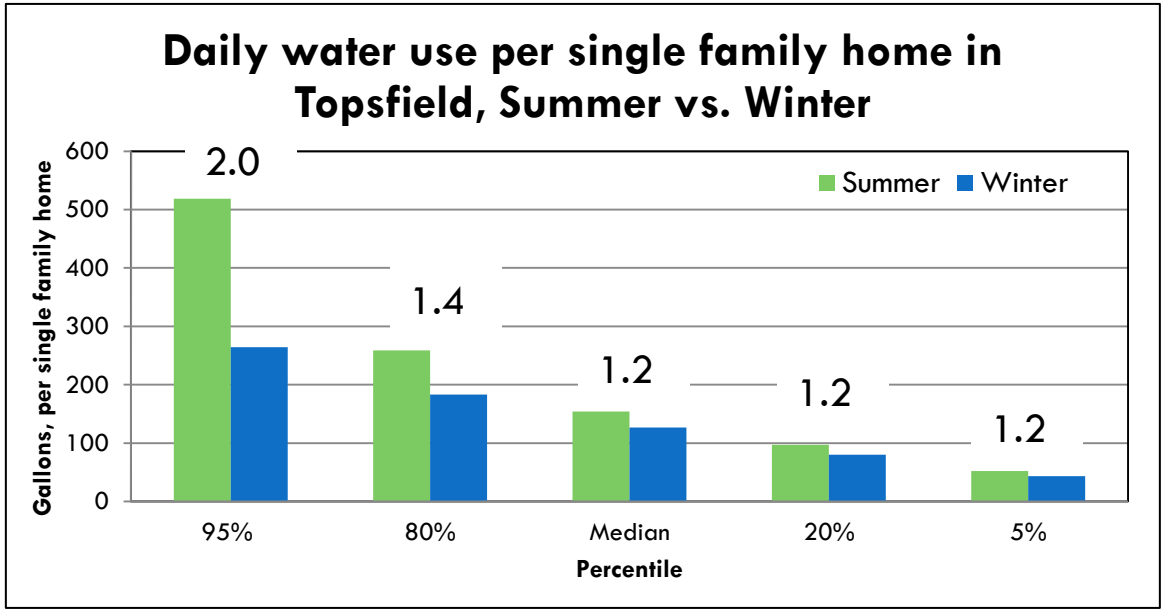
Background on Project

- Why is DER interested in summer water conservation ?
  - Improve streamflow conditions
    - Water use is highest when streamflow is lowest
  - Explore innovative, non-regulatory ways to encourage conservation and reduce summer outdoor water use
  - Increase our understanding of water users and their barriers to reducing summer outdoor water use

Summer Water Use in Ipswich Towns

Town	Winter/Summer Water Use Ratio (2009-2014)
Danvers	1.3
Hamilton	1.3
Ipswich	1.3
Lynnfield Center	1.8
Middleton	1.6
North Reading	1.4
Peabody	1.3
Salem-Beverly	1.2
Topsfield	1.4
Wenham	1.3
Wilmington	1.3

Average Winter/Summer Water Use Ratio in Ipswich Watershed Towns: 1.4



Community Based Social Marketing (CBSM)

- Many efforts to encourage consumers to change behavior/reduce resource use have fallen short of expectations
- More than just information and financial considerations drive behavior – social and psychological factors also play a significant role
- CBSM merges knowledge from psychology with social marketing to develop behavior changing strategies

CBSM Methods

Five major steps

1. Identify which behaviors are most important
2. ID community-specific barriers & find the benefits – why target audience would elect to participate in behavior change
3. Develop strategies which increase benefits for desired action & reduce barriers to desired action
4. Pilot several strategies against each other & evaluate
5. Implement broadly

CBSM pilot project

- DER and IRWA began the first steps to develop and implement a CBSM campaign to reduce summer outdoor water use in the watershed in winter 2016
- To date we have developed a prioritized list of target behaviors & researched benefits and barriers to adoption
- We have started developing potential campaigns and reaching out to potential towns

Methods – Identify behaviors

- Created list of 31 potential summer water use behaviors
- Determined impact of adopting behaviors (gallons/week savings) based on best available estimates
- Conducted mail survey of 300 residents in Wenham and Topsfield to assign penetration, probability and applicability to behaviors
  - 57% response rate

Methods – Determining Penetration, Probability, Applicability

- Penetration – how many residents have already adopted certain behaviors
- Probability – how likely are residents to adopt certain behaviors
- Applicability – the presence or absence of features (pool, irrigation system, lawn)

Methods – Determining Penetration, Probability, Applicability

- Survey looked at:
  - How residents care for their lawn: do they water lawn? how often?
  - Lawn watering: how willing residents would be to install water saving devices and engage in water saving behaviors on their property
  - Other water actions (care washing, pool care), how willing residents would be to implement 'non lawn' related water saving actions
  - Demographics (lot size, # of people in household)

Prioritize behaviors

IPPA Table without Data Sources

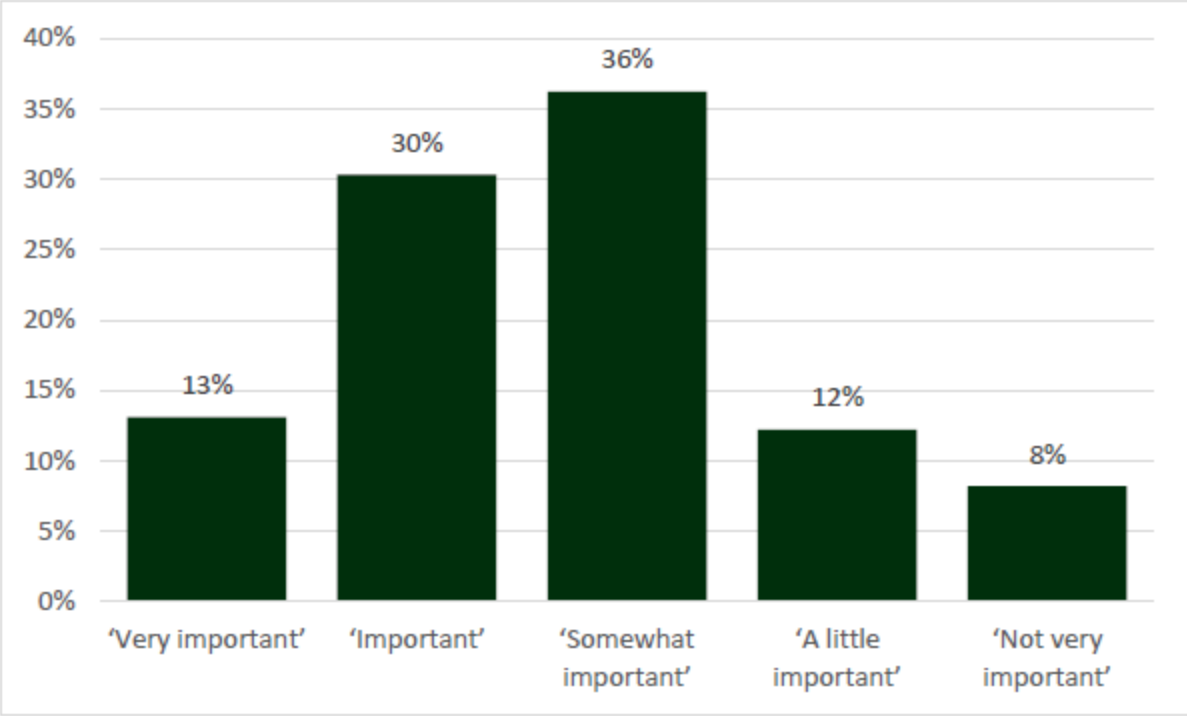
Behaviors	Impact (gal/week)	Penetration (0-100%)	Probability (0-10)	Applicability (0-100%)	Weight
Outdoor-Lawn Watering					
Stop lawn watering in summer	804	52%	3.34	99%	1276
Eliminate lawn watering during rainy weeks	643	88%	2.92	99%	223
Install weather-sensitive irrigation controller switches (WSICS) or other weather sensing/water sensing devices yourself	241	16%	0.99	17%	34
Install WSICS or other weather sensing/water sensing devices expert	241	16%	1.04	17%	36
Water lawn in the early morning	112	43%	3.5	99%	221
Properly position sprinklers/hoses to only water lawn	200	51%	4.86	72%	343
Water lawn only when stressed	660	55%	3.19	99%	938
Repair irrigation system water leaks-low	120	12%	4.72	72%	359
Repair irrigation system water leaks-high	1000	12%	4.72	33%	1371
Outdoor-Lawn Planting					
Replace some of lawn with flowers, shrubs, or ground cover yourself	240	14%	2.16	99%	441
Replace some of lawn with flowers, shrubs, or ground cover with expert	240	14%	0.98	99%	200
Install drought resistant grass yourself	200	19%	1.47	99%	236
Install drought resistant grass on with expert	200	19%	1.25	99%	200
Outdoor-Car					
Wash car at car wash	60	55%	3.06	100%	83
Outdoor-Pool					
Use a pool cover	161	7%	1.93	20%	58
Fix pool leaks	392	7%	8.37	20%	609
Winterize pool without draining	1125	99%	5	20%	11

Weight = Impact * (1-Penetration) * Probability * Applicability

Methods – Identify barriers/benefits

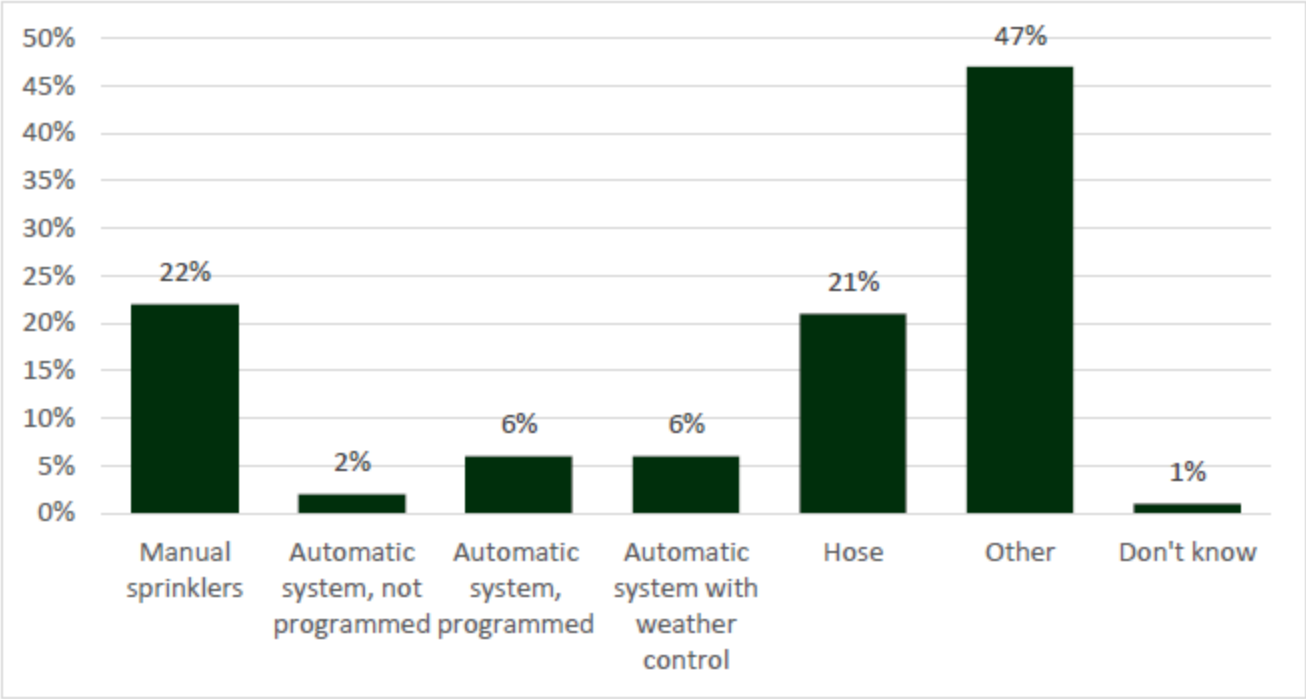
- Mail survey to 800 Topsfield and Wenham residents (44% response rate)
- Examined barriers and benefits to four behaviors. Questions focused on:
  - Current yard characteristics and watering habits
  - Barriers and benefits to not watering grass during the summer
  - Barriers and benefits to fixing leaks in the irrigation system
  - Barriers and benefits to installing a weather-based controller on automatic irrigation
  - Barriers and benefits to fixing pool leaks
  - Demographics
  - Comments/suggestions on water conservation

Importance of a Green Lawn



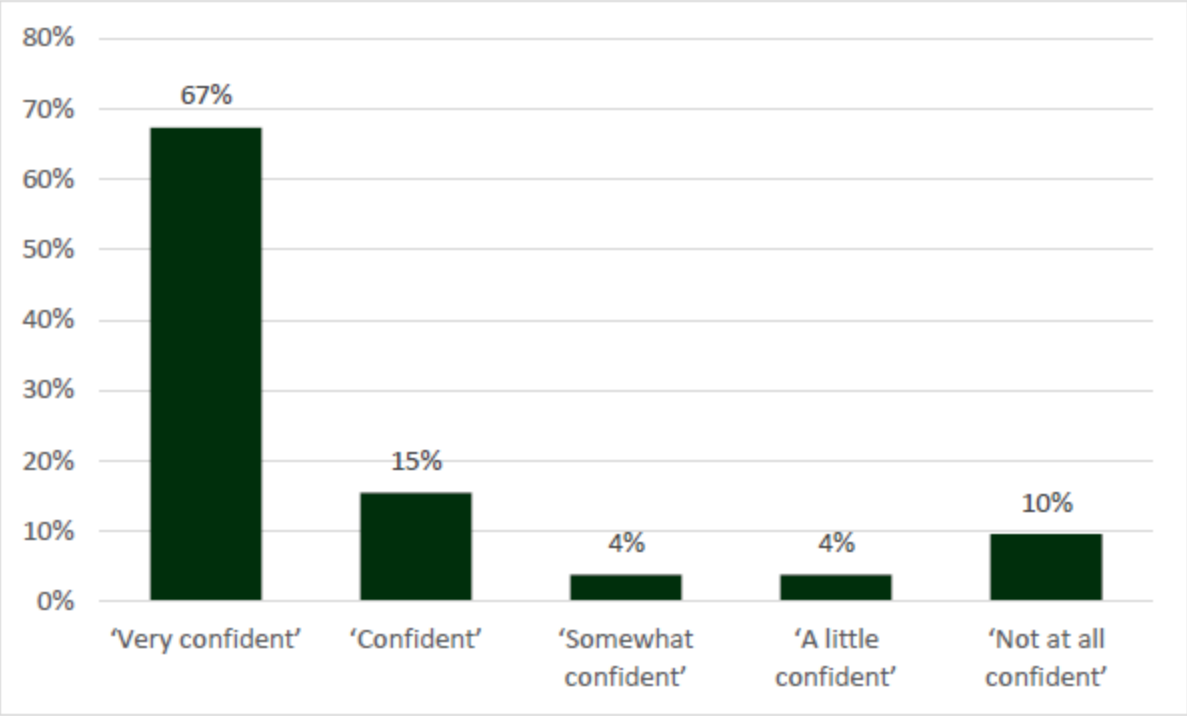
- 80% responded that green lawns were at least somewhat important

Type of Irrigation System



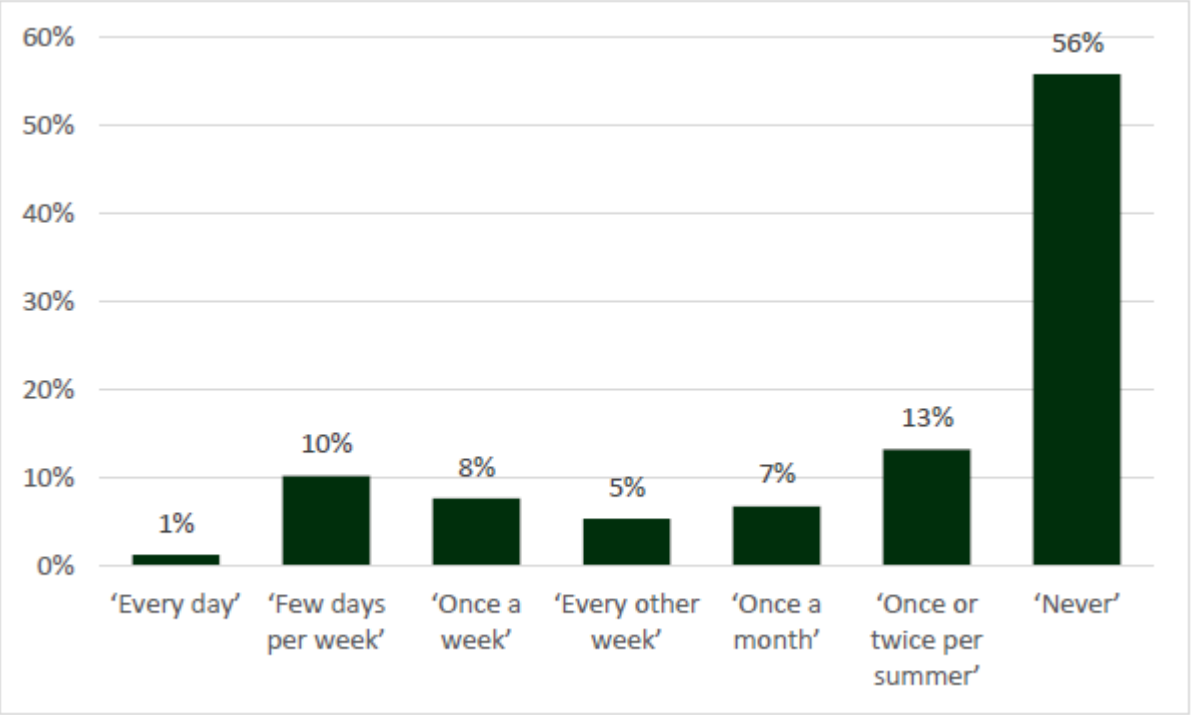
- 14% have an automatic irrigation system
- Primary types of irrigation are manual sprinklers and hose (43%)
- Majority of the 'other' responses reported using only rain to water lawn

Confidence in programming automatic irrigation



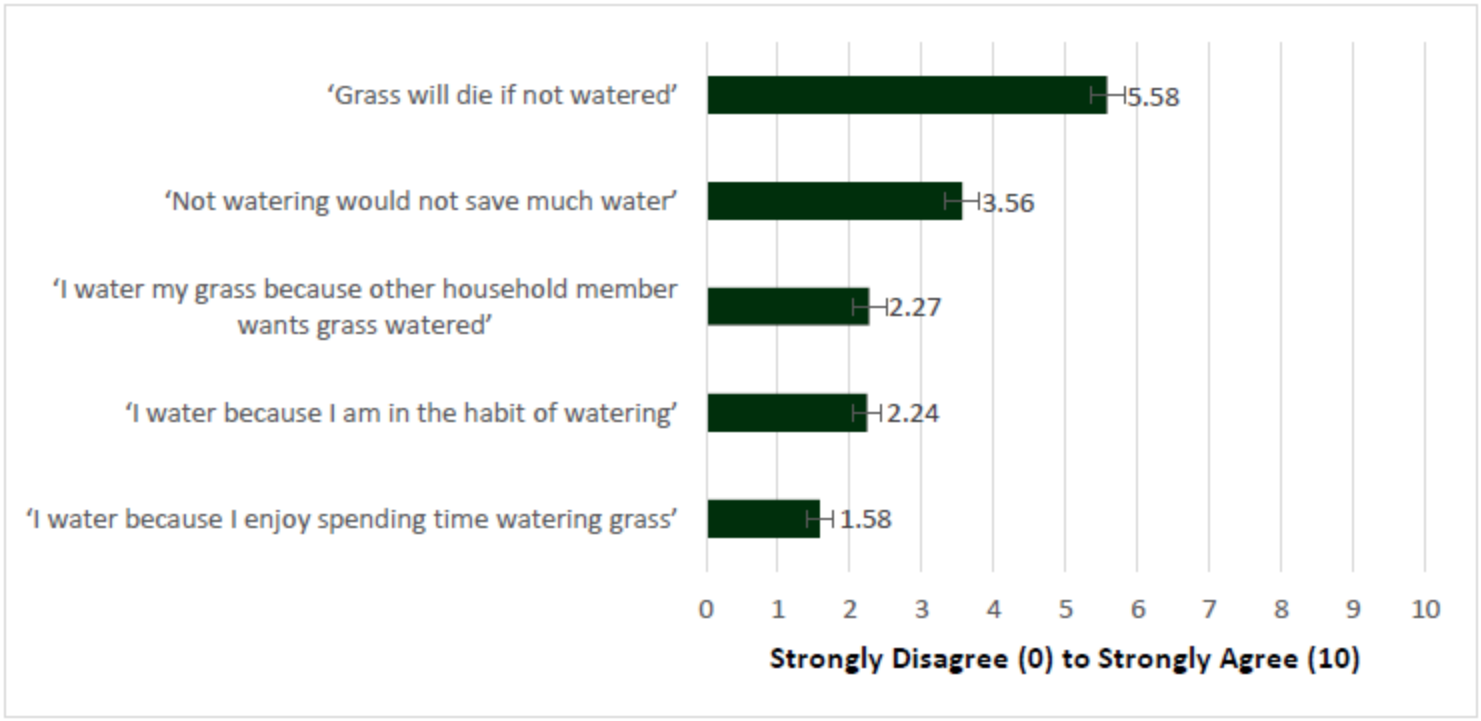
Most respondents were confident in ability to program automatic irrigation

Frequency of summer grass watering

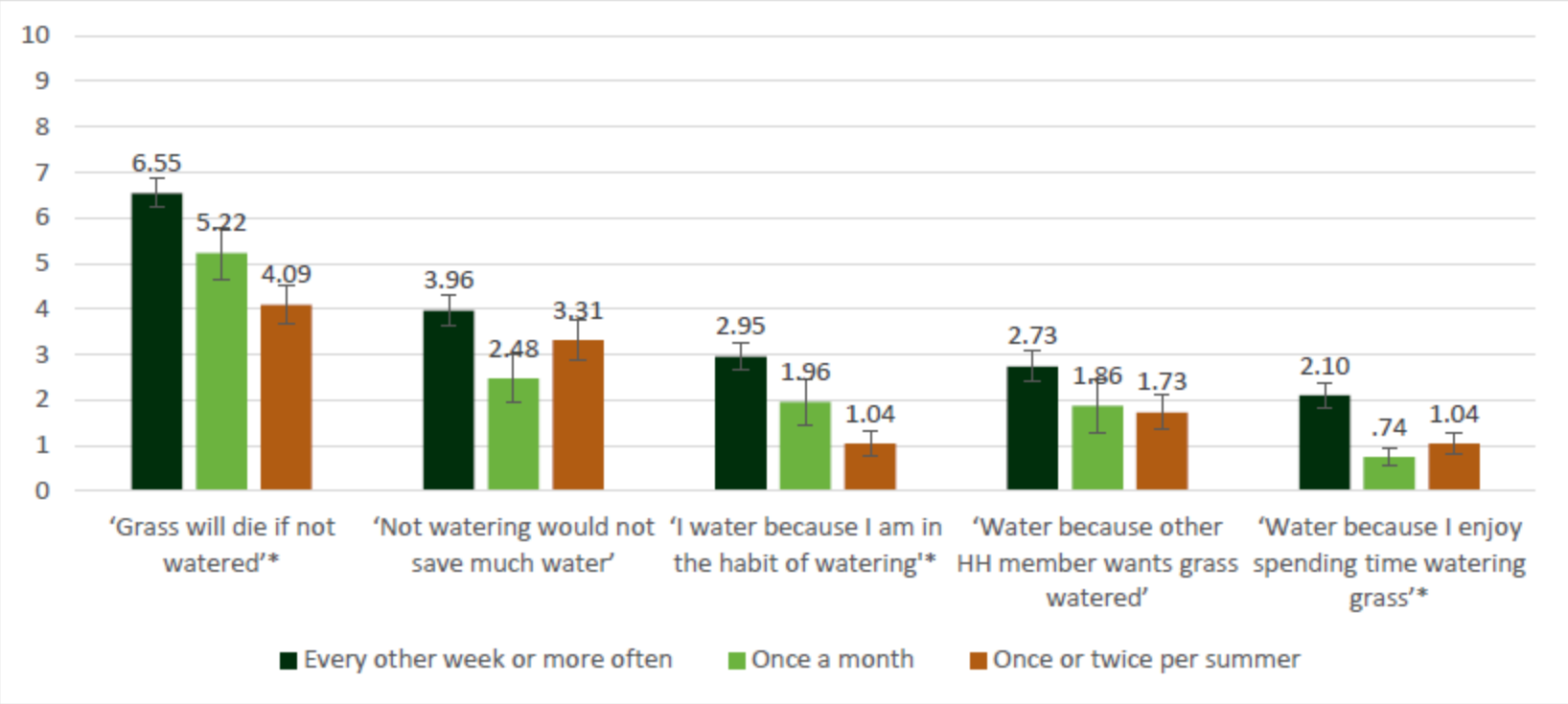


- 19% water at least once a week
- More than half (56%) never water grass

Barriers to not watering grass in summer

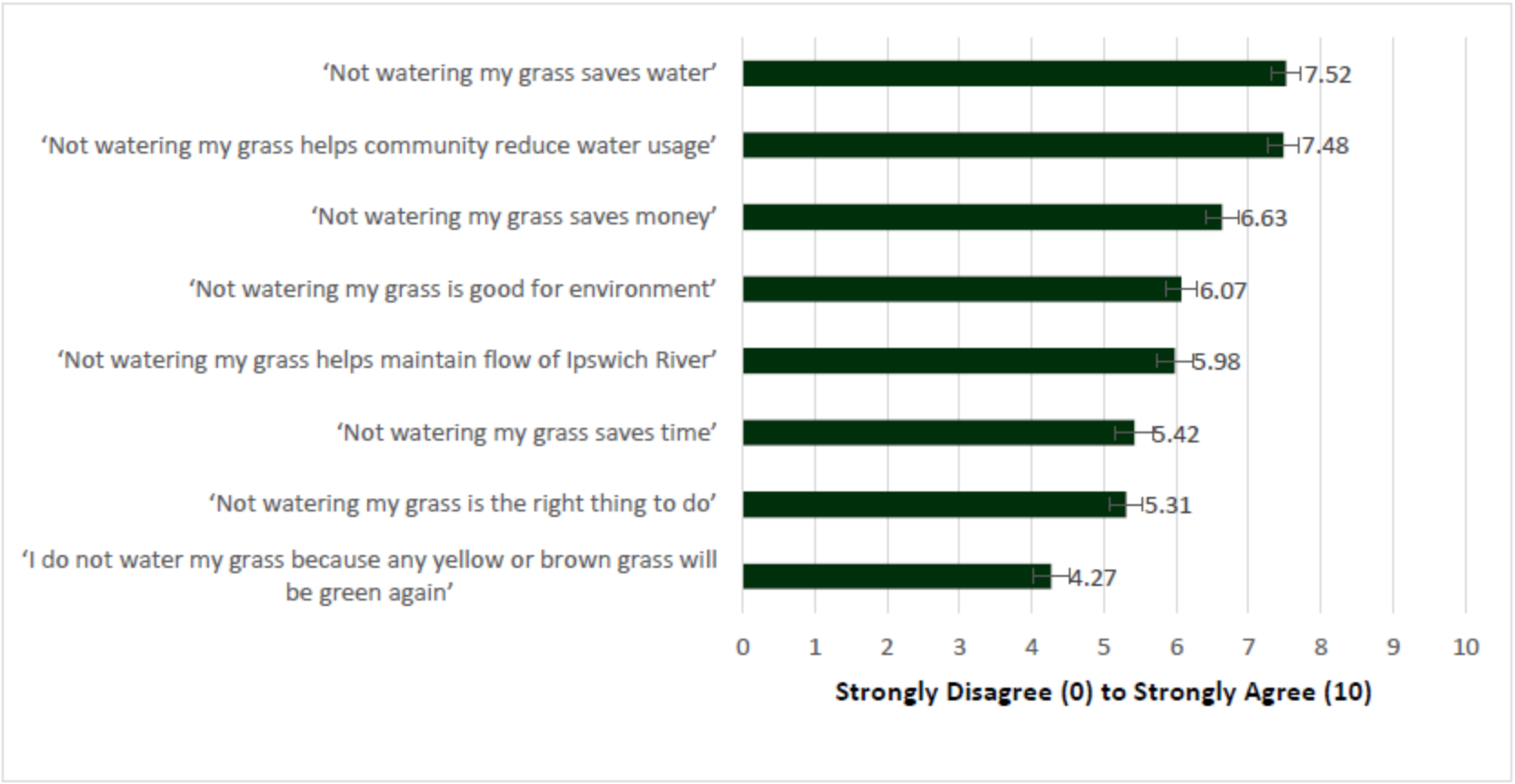


Barriers to not watering grass

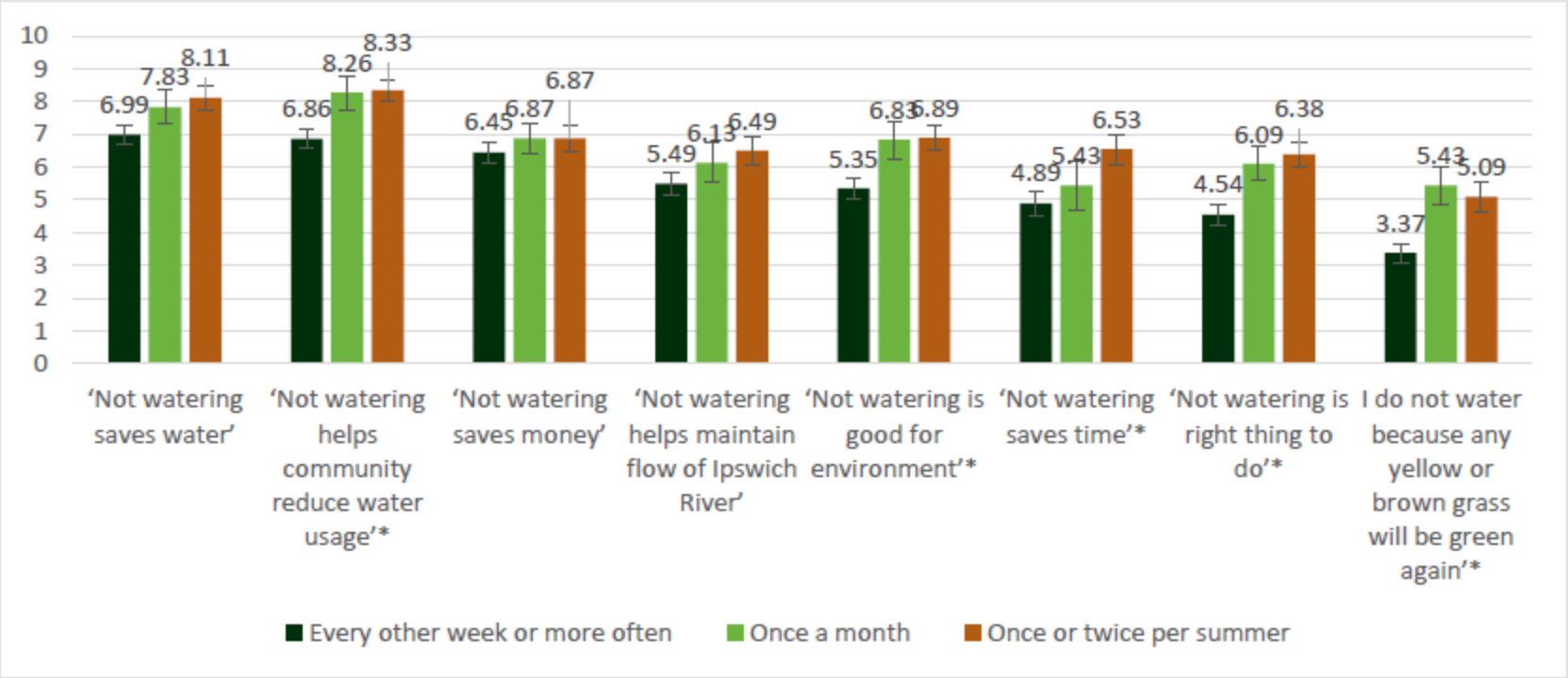


Those who water most frequently most strongly believed grass would die if not watered

Benefits to not watering grass



Benefits to not watering grass



Those who water most frequently are the least likely to believe that not watering will save water

Barriers & Benefits

1. Stop watering grass during summer months

- Primary perceived barriers: *Grass will die if not watered; not watering grass would not save much water*
- Primary perceived benefits: *Helps my community reduce water usage; it saves water; it saves money*

2. Fix leaks in irrigation

- Primary perceived barriers: *Do not have any leaks; do not know how to fix leaks; do not have the correct tools to fix leaks; do not know how to detect leaks*
- Primary perceived benefits: *It is the right thing to do; it saves water; it saves money; it is good for the environment*

Barriers & Benefits

3. Install a weather-based controller on automatic irrigation

- a. Primary perceived barriers: *Want to have control over my system; do not know how to install a controller; do not know where to buy one; do not use my automatic sprinkler system*
- b. Primary perceived benefits: *Helps my community reduce water usage; it is the right thing to do; it is good for the environment*

4. Fix pool leaks

- Primary perceived barriers: *Do not have the right tools; too expensive to hire someone to fix the pool leak; do not know how to tell if the pool is leaking; too difficult to fix a pool leak*
- Primary perceived benefits: *it is the right thing to do; it saves water; it saves money; it is good for the environment*

Next Step: Develop strategies, pilot campaign & evaluate

- Social norms campaign
  - Compare high water users to other more efficient water users in same neighborhoods with similar property/household size
  - Could be combined with offers for irrigation audits, direct outreach from watershed association
  - Education on water use for different irrigation methods and potential water savings, emphasize community water savings
- Commitment Campaign
  - Would work with water department on specifics, could be a voluntary commitment to water 1" per week including precipitation
    - Make commitment public, focus on community water savings
  - Education on how much water grass needs, impacts of over watering

Examples of CBSM Success

- Durham, Ontario – Water lawns max of 1” per week including rainfall
  - Households visited by college students, distributed brochures, explained that lawns only need 1” water per week – reduced water use by 26%
  - Households also signed commitments to only water 1”/week – water use reduced by 32%
  - Other households received only info packet on efficient water use – water use reduced by 15%

CBSM in summary

- An effective non-regulatory tool for reducing non-essential outdoor summer water use and improving streamflow
- Allows you to better understand water users and target your message so that it is most effective
- Can inform education around watering restrictions and summer water conservation

Questions? Ideas?

Michelle Craddock, Watershed Ecologist
MA Division of Ecological Restoration
michelle.craddock@state.ma.us
617-626-1544