

dcr
Massachusetts



downstream

Reservoir Gulls

Tracking their habits

by Ken MacKenzie, DCR/DWSP Wildlife Biologist

Editor's note: This article is a follow-up to the feature story from Downstream No. 21 that introduced the DCR/DWSP Gull Tracking Study. In this issue we share the study's initial findings.

Remember the first day that the DCR Wildlife Team (Natural Resource staff from the Division of Water Supply Protection) received data from one of our satellite tagged gulls. It was like opening up the first page of a book written about the winter habits of Jonathan Livingston Seagull. As we excitedly looked at the data, we discovered that the herring gull tagged by us near Wachusett Reservoir just the day before, on March 11, 2008, was no longer in Massachusetts. This gull had made a large scale movement and was now in New Brunswick, Canada. Amazingly, over a 24-hour period it moved northeast approximately 350 miles! All of us knew at this point that we were going to learn a lot from this study.

The Research

Gulls are the Division of Water Supply Protection's top concern because of the number of birds that roost on the Wachusett and Quabbin Reservoirs and their documented link to water quality degradation. Gulls can carry, and potentially transmit, a variety of bacteria and pathogens. *Salmonella*, *E. coli*, *Campylobacter*, *Listeria*, and fecal coliform have all been documented in various species

of gulls. The Division has had an active bird harassment program on the reservoirs for many years that successfully minimizes the birds' impact. Ideally, however, the Division would like to see the number of gulls roosting on the reservoir (and other water supply reservoirs) substantially reduced or eliminated.

The Division began an intensive research program in January 2008 to address the lack of knowledge about the habits of wintering gulls in Massachusetts (see Downstream #21, Spring 2009). We wanted to know how often the gulls are using the reservoirs, where they

The next time you consider tossing a few crumbs out to the begging gull next to your car, please stop and consider where these gulls are going each night and the impact they can have on water supply reservoirs.

are feeding and are there places other than the reservoirs that they use as night-time roosts. To shed some light on the questions proposed, Division biologists needed to capture and mark individuals that could be easily identified and tracked. Once captured, all birds were marked with either a combination of bands/colored wing tags or a satellite/GPS transmitter.

Telemetry is a technology that allows remote measurement and reporting of information. The term commonly refers to wireless data transfer using radio waves; it is used in many aspects of modern life, including motor racing, agriculture, water management, medicine, retail business, law enforcement and rocketry. Telemetry is also being used to study wildlife. Animals under study may be fitted with instrumentation, ranging from

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www.mass.gov/dcr/watersupply.htm



The Wachusett Watershed Regional Recycling Center

A state, local and non-profit partnership success story

By Joel Zimmerman, DCR Regional Planner



The Wachusett Watershed Regional Recycling Center is a unique partnership that provides a regional approach to recycling and to the environmentally sound management of household hazardous products. Residents of the watershed along with the more than 2 million people who use Wachusett Reservoir as their source drinking water benefit from the safe handling and disposal of these materials. The seven participating communities also avoid the significant cost and labor of maintaining individual municipal facilities.

The recycling center, located at 131 Raymond Huntington Hwy. in West Boylston, opened in December 2009. It was built through a partnership of the MA Department of Conservation and Recreation's Division of Water Supply Protection, Wachusett Earthday Inc., and the communities of Boylston, Holden, Paxton, Princeton, Rutland, Sterling, and West Boylston. Funding for the \$350,000 center included: \$138,000

in capital funds, as well as the site location, from DCR; a \$50,000 Municipal Sustainability Grant from MA Department of Environmental Protection (DEP); \$129,000 from the participating municipalities; and \$35,000 in private funds raised by Wachusett Earthday Inc. A septic system, water well, and electric service were established on the site in 2010. Participating towns' municipal light companies worked together to extend electric service to the site, including six new utility poles, wires, and a transformer. DCR personnel moved one of the two donated office trailers into position to serve as a temporary shelter and storage space until a permanent building can be constructed; planning for a future building is on-going and construction is anticipated in 2013.

The Collection Center held its first

Household Hazardous Products (HHP) collection in December 2009; three additional HHP collections were held in 2010. Recycling collections have been held since the spring of 2010. HHP collections utilize licensed contractors certified to properly handle and dispose of these materials. All other collections are staffed completely by volunteers from Wachusett Earthday and the participating towns.

Future planned work at the center includes construction of a building to accommodate expanded recycling and re-use capabilities. As the site continues to develop, DCR and Wachusett Earthday plan education programs on recycling and proper disposal of, as well as environmentally friendly alternatives to, hazardous products.

The Watershed Recycling Center is open every Wednesday from 2:30 to 4:30 p.m. and the third Saturday of each month from 8 a.m. to 11 a.m. when bulk, recycling and reuse items are collected. Four

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Photo Credits

- Page 1 Both, Ken MacKenzie
- Page 2 Dan Clark
- Page 3 DCR Division of Water Supply Protection
- Page 4 Mike McCarthy, Newfoundland, Canada
- Page 5 Top Left, Dan Clark
Top Right, Ken MacKenzie
Middle, Ken MacKenzie
- Page 6 All, DCR Division of Water Supply Protection
- Page 8 Both, Dale Monette

Wachusett Watershed Regional Recycling Center 2010 Facts and Figures

Total Number of Collections	25
Household Hazardous Waste Days	4
Car Trips to Center	2,792

Materials Collected

Household Hazardous Waste (pounds)	> 5,000
Computer Monitors and Televisions	1,302
Appliances and Refrigerators	1,272
Furniture	815
Debris (cubic yards)	133
Tires	824
Propane Cylinders	316
Recyclable Metal, Cardboard, Plastic, and Other Waste (tons)	118

Data Source: Wachusett Earthday, Inc

HHP collections are planned for 2011 between April and November to be held on Saturdays along with the bulk collections.

The first HHP collection in 2011 was held on Saturday, April 16. Please go to www.wachusettearthday.org for details on dates, directions, and costs. ♠

Quabbin Reservoir Boat Seal Program

Preventing the spread of invasive species

By Paula Packard, DCR Aquatic Biologist

Aquatic invasive species (AIS) are increasingly becoming a problem worldwide. In the US alone, there are more than 1,000 AIS, causing problems ranging from habitat destruction to water quality impairment to degradation of fisheries. These non-native species can cause significant ecological damage when they become established in an area where they are not normally found, as they have few, if any, natural predators, diseases or other constraints to keep their numbers in check.



A boat can be inspected and cleaned for certification that it is free of Invasive Aquatic Species in about 20 minutes. Bob Bishop (left), head of the Quabbin Environmental Quality Section, completes a Cold Weather Quarantine certification, so this boat will be ready for April fishing on the Quabbin Reservoir.

How invasive species are spread

AIS are frequently described as “hitchhikers” because they may ride along hidden and undetected in many places: in the bilge or live well of boats; in bait buckets; or attached to trailers, carpeting on bunks, on waders, boots and other equipment. Numerous species are microscopic or have a microscopic life-phase, so they are impossible to see. Humans are a significant cause for the spread of AIS; wildlife, however, can also be carriers, so there are no guarantees that an invasive species will never get into the DCR water supply system. But the Quabbin Boat Seal Program and Cold Weather Quarantine effectively minimizes this risk.

Quabbin Boat Decontamination

As of fall 2009, boats launched at Quabbin Reservoir must go through a boat decontamination process which includes an inspection, motor flushing, and thorough washing of the boat and trailer using hot water. Motors may be flushed with vinegar if the boat owner has concerns about the use of hot water. After decontamination, a wire with a seal is affixed, connecting the boat to the trailer. This seal must be intact upon the next arrival at the boat launch areas. At the boat area, the attendant removes the seal, the boat is launched and the seal is replaced when the boat is once again trailered.

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How to Get a Quabbin Reservoir Boat Seal

- Please call 413-323-7221 for an appointment. All inspections are by appointment only!
- Boat Decontamination
 - Available April-September.
 - Cleaning is done in Orange, MA.
 - Boat and trailer must be clean, dry, and with minimal rust.
 - No carpet is allowed on trailer.
 - The fee is \$40.
- Cold Weather Quarantine
 - Available November-December.
 - Inspections are conducted in Belchertown and New Salem, MA.
 - Carpeting is allowed, but boat and trailer must be clean, dry, and with minimal rust.
 - Cold Weather Quarantine is free.

Quabbin and Ware Self-Certification

DCR started this program in the summer of 2010 to increase public awareness of AIS beyond Quabbin Reservoir. Boaters are asked to fill out a self-certification form before launching a boat, canoe, or kayak on key water bodies within the Quabbin and Ware River watersheds, including Long and Comet Ponds.

The form's questions look at the boat's recent use along with a risk assessment that gages the possible spread of AIS. Users are directed to clean boats of plant fragments, mud, or organisms and drain all water from live wells, bilges, and motors. If there is any chance that the boat may harbor AIS, DCR requests that the boat not be launched until after decontamination. This can be done either by drying (from one to four weeks, depending on the season) or washing (either high-pressure washing with water over 140°F, a 1% bleach solution, or 1% solution of a phenol-based cleaner). Completed forms are displayed on the vehicle windshield, which are periodically checked by DCR staff.

Forms are available at the kiosks next to DCR boat ramps in the Quabbin Reservoir and Ware River watersheds.

Please note that the self-certification program does not replace Quabbin Reservoir boat seal requirements. Power boats, canoes, and kayaks are available to rent at the Quabbin Boat Launch Areas. Call the Quabbin Visitors Center for more information.

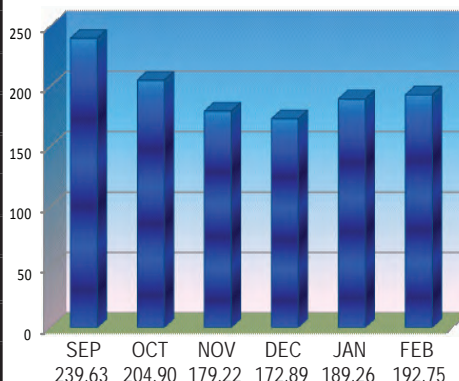
Reservoir Watch

Reservoir levels and 6-month precipitation

Reservoir	Quabbin	Wachusett
Minimum	523.59'	387.16'
% Full	88.2%	84.6%
Date	12/1/10	2/22/11
Maximum	525.64'	391.12'
% Full	91.9%	92.3%
Date	9/2/10	12/28/10
Precipitation	21.3"	21.75"
Seasonal Avg	23.04"	22.21"

Data Source: MWRA

System-wide 6-month Water Usage (in million gallons per day) September 2010 to February 2011



Gull tracking shows results From Page 1

simple tags to cameras to GPS packages and transceivers, that provide position and other basic information to scientists and stewards. The key word in this definition of telemetry is *remote*. This type of study allows biologists to acquire information about an animal without directly influencing the animal's behavior. After the initial capture and placement of the tag or transmitter, that animal is no longer affected by the biologist. Thus telemetry was the ideal way for the Wildlife Team to study gulls.



These images, taken in Corner Brook, Newfoundland, show a healthy, well traveled bird in flight and at rest.



Results

The results of this study have been tremendous. By the end of March 2011, the Wildlife Team has captured almost 1,100 gulls and have had over 3,200 reported sightings. Data from 34 satellite/GPS transmitters has also been collected. Thanks to this information, we have learned a lot about where, when, and how long gulls are spending their time in Mas-

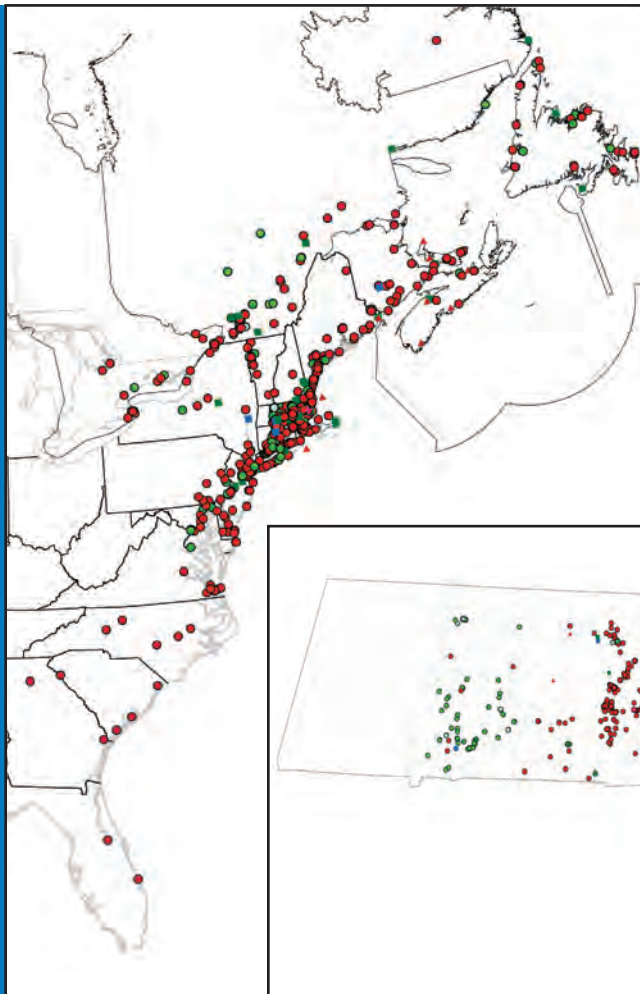
sachusetts.

The Wildlife Team has identified several feeding areas — parking lots and waste water treatment plants — that pose problems for the Wachusett Reservoir. There are many gulls that use wastewater treatment plants to feed, bathe, and drink. You can immediately see how this would conflict with drinking water reservoirs. Additionally, gulls have learned that

spending time in a parking lot often leads to free food. In some cases, people will casually feed food to begging gulls. In other situations, there are more dedicated feeders. These individuals travel to parking lots with large amounts of food that is dumped on a regular basis to specifically feed gulls. In both scenarios, the gulls recognize and take advantage of this reliable and easy source of food.

Gull Sightings (as of 4/12/11)

# Sighted	State/Province
2,138	MA
337	CT
103	ME
92	NY
84	RI
74	Quebec
70	Newfoundland
50	New Brunswick
45	NJ
40	NH
26	VT
26	PA
20	MD
19	Ontario
17	Nova Scotia
16	DE
14	Prince Edward I.
12	VA
6	NC
4	FL
4	SC
3	GA
2	Labrador
1	DC
1	Bermuda
1	Manitoba



These maps and the table at far left show the recorded gull sighting data. The map at center displays the range of gull sightings all along the eastern seaboard while the map below are the number of sightings (over 2,100) in the state of Massachusetts. The color of the sighting notation is reflective of the color of the wing tag (explained on the facing page) on each bird.



Some gulls in the study, like the one at left, were fitted with a radio transmitter that can record six locations per day and send data every two weeks. This information is then mapped, as shown below, so the travels of an individual bird can be closely analyzed.



Unfortunately, there are several negative consequences of this human-gull dynamic. As part of their biology, gulls always spend the night on water in large communal roosts. Gulls that are feeding in various parking lots in central Massachusetts often make their way back to Wachusett or Quabbin Reservoirs, the two largest bodies of freshwater in the area. Alternatively, gulls may spend the night roosting on other water bodies in the area, which could also be water supply reservoirs. Large concentrations of gulls on any water supply reservoir have potentially negative consequences.

There is, however, an opportunity to change the human-gull-reservoir dynamic. Our research indicates that gulls are highly mobile and willing to travel in search of food. If the amount of food available at parking lots can be severely reduced or eliminated, then without a steady and reliable source of food in central Massachusetts, it is likely that over time gulls will recognize the change and shift their movements and roosting behavior to areas where food is more abundant. If handouts are no longer available, it is possible that

gulls will begin to utilize more natural foods.

The Public's Help

Reducing or eliminating the food supply for gulls can only be done with the public's help and cooperation. The next time you consider tossing a few crumbs out to the begging gull next to your car, please stop and consider where these gulls are going each night and the impact they can have on water supply reservoirs. Gulls are highly resourceful, very mobile, and extremely adaptable. They will survive just fine without the french fries, crackers, or bread that people provide.

In addition, please let us know if you happen to spot a wing-tagged gull. We are continuing our study and would be very interested to learn where the captured gulls are sighted. If you see a wing-tagged gull, please contact: dan.clark@state.ma.us or 508-792-7423 ext. 215 with the date and time of the sighting, the color of the wing-tag, and if possible the alpha-numeric combination. For more information about the study and the problem, please visit: www.mass.gov/dcr/gullstudy.

Gull Study Tagging: How It's Done

After identifying regular gull feeding sites, DCR scientists capture the birds, most often utilizing a net launcher.



The launched net is shown settling over the distracted feeding gulls harmlessly trapping them.



After capture, leg bands as well as tags (tag key shown below) are painlessly attached on each wing of the gull. These wing-tags do not hamper the birds regular activities, but are clearly marked for long-distance identification. Tags, color-coded to the capture location, near either Wachusett or Quabbin Reservoir, also include a letter code noting the gull's species.

Gull Study Wing Tag Key		
Wachusett Area	dcr Massachusetts	Quabbin Area
AH AH	A Ring-billed Gulls	AI AI
KO KO	K Herring Gulls	KO KO
JO JO	J Black-backed Gulls	JI JI

Quabbin Boat Decontamination Program By The Numbers

- 115** Boat Decontaminations (April 2011)
- 1,168** Total Boat Decontaminations since program inception
- 70** Cold Weather Quarantines (Nov 2010 - Jan 2011)
- 139** Total CWQ since program inception
- 49** Boats sealed more than once
- 95%** Quabbin only boats

Data Source: DCR/DWSP Quabbin Section



These pictures show the decontamination process. First, boats line up for their appointments. Next, an inspector checks each boat. Then, a thorough cleaning takes place, after which a certification seal is attached, connecting the boat and trailer.



Beware carpeted trailer bunks

Carpeted bunks have a strong potential to harbor aquatic invasive species, even after boat decontamination. Some invasive species, such as the spiny water flea (see *Downstream* #21), have a resting egg stage that can withstand relatively long periods of drying and temperature extremes. Therefore, no carpet can be allowed on any portion of a boat or trailer that may come in contact with the water. However, carpeting can be allowed with the CWQ method, because all organisms will be killed by the end of winter. We are especially concerned about spiny water flea, so this rule is strictly enforced.

We appreciate everyone's cooperation with these programs to help keep AIS out of Quabbin Reservoir! 💧



From Page 3

If a boat is used exclusively at Quabbin, it will not need to be decontaminated again. However, if the seal is broken or the boat is used elsewhere (thus breaking the seal), the boat owner must either have the boat decontaminated again at a cost of \$40 or they may choose to wait until fall and utilize the free Cold Weather Quarantine (CWQ). CWQ inspects and seals boats, but does not wash them, in November and December. Because the boat has been stored dry for at least three months, it ensures that all organisms that may have be on the boat or trailer have sufficiently dried, frozen and/or died-off before the boat is again launched at the Quabbin Reservoir.

Ask the Ranger
Answers to questions from *Downstream* readers



By Lieutenant Rebecca Baronoski, Wachusett Watershed Ranger

Q. Why are certain areas of the Wachusett Reservoir posted as no trespassing or no fishing?

A. This provides primary protection of the water supply by prohibiting or limiting public access near reservoir intake structures. The Wachusett Watershed Public Access Plan divides the watershed into three zones, the Intake Protection Zone being the most limited in terms of public access.

Q. How big is the Wachusett Reservoir?

A. The reservoir can be measured in a number of ways:

- It holds **65 billion gallons of water** at full capacity.
- The water surface area is **6.5 square miles**.
- It contains **37 miles of shoreline**.
- It is **8.4 miles long** and, at its maximum, **2.1 miles wide**.

In comparison, the Quabbin Reservoir is much larger:

- It holds **412 billion gallons of water** at full capacity.
- The water surface area is **39.4 square miles**.
- It contains **118 miles of shoreline**.
- It is **18 miles long** and, at its maximum, **3 miles wide**.

Together, these two source reservoirs can safely provide 300 million gallons of water a day. Reservoir Watch on page 3 shows actual water use.

If you have a question for Ask the Ranger, email it to Wachusett.Rangers@massmail.state.ma.us, call (978) 365-3800, or ask a Ranger in person when you see one out around the reservoirs.

Kids Corner

Designed For Survival

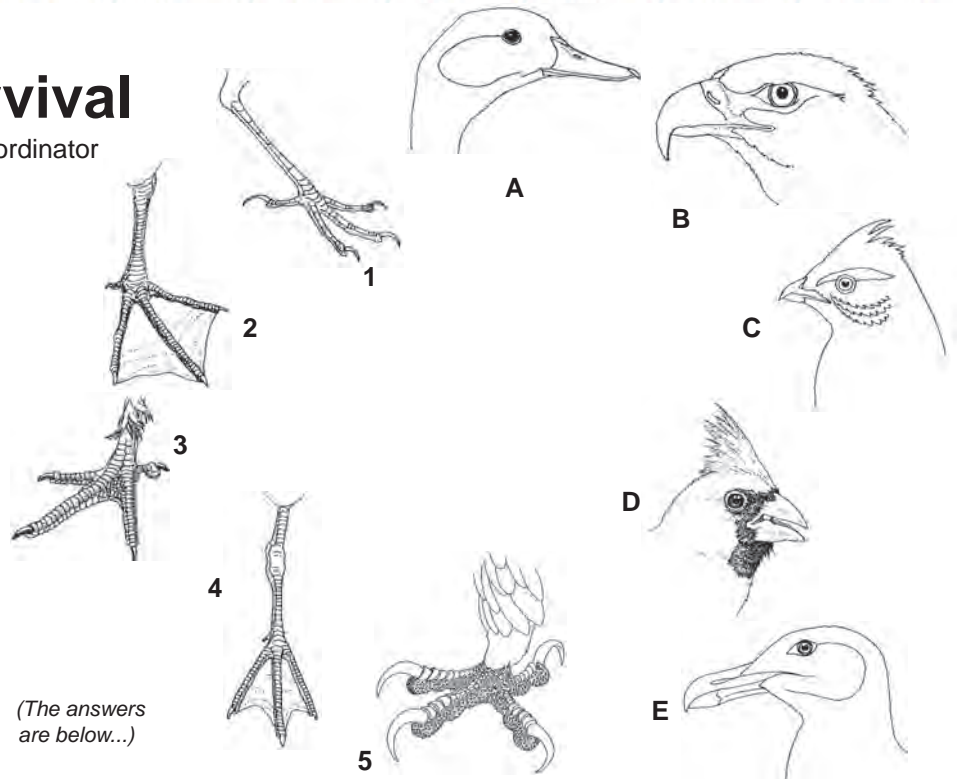
by Jim Lafley, DCR/DWSP Education Coordinator

Much can be told about a bird's way of life from the design of its feet and the shape of its beak.

Both ducks and gulls have webbed feet adapted for swimming, but gulls spend more time walking on land, so their foot is narrower. Ducks are clumsy walkers with their broad feet but spend most of their time on water.

Grouse scratch the ground for seeds and insects so they have chicken-like feet. Hawks and eagles need to catch prey with their strong sharp talons. Cardinals have long, thin toes, three in front and one in back, for a life amongst the twigs and branches.

Ducks eat plants and insects with a broad flat bill, but gulls eat a lot of different foods, so their beak is adapted to tear apart food, pick through trash, catch fish, and grab shellfish, insects and other small animals.



(The answers are below...)

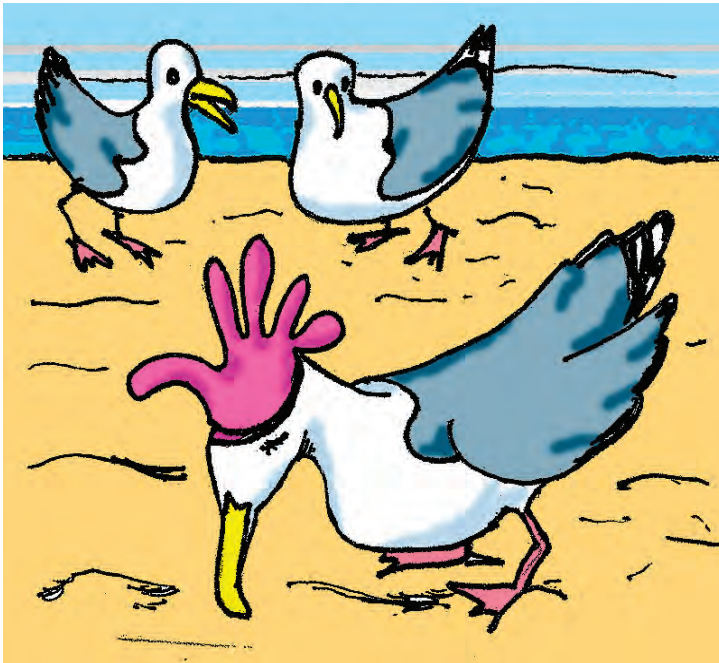
Eagles' beaks are sharp and used to tear apart fish and small animals, while grouse grab insects and seeds from the ground. Cardinals have a strong beak used to crack seeds and cut through cones.

See if you can name each bird and draw a line matching the bird's beak with its feet

Sketches from The Audubon Society Encyclopedia of North American Birds by John K. Terres; Alfred A. Knopf, New York, NY. 1987

And another thing...

by J. Taylor



"Oh him, he's just playing chicken!"

For more information about...

Wildlife Satellite Tracking

DCR Gull Study

www.mass.gov/dcr/gullstudy

Sea Turtles (and more)

www.seaturtle.org/tracking

Movebank (worldwide data on all types of animals, birds, and insects)

www.movebank.org

Household Hazardous Waste Recycling

Wachusett Earthday

www.wachusettearthday.org

Alternative Household Cleaner Recipes

www.ecocycle.org/hazwaste/recipes.cfm

Quabbin Boat Decontamination and Aquatic Invasive Species

Quabbin Fishing

www.mass.gov/dcr/watersupply/watershed/quabfish.htm

Lakes and Ponds Aquatic Invasive Species

www.mass.gov/dcr/watersupply/lakepond/invasive_1.htm

Kids Corner Answers:

1-D (Cardinal); 2-A (Duck); 3-C (Grouse); 4-E (Gull); 5-B (Eagle)

Photo Documentation Helps Us Find the Past

By Dale Monette, Quabbin Visitors Center




Archived images of the region before the Quabbin Reservoir are being studied and documented with current pictures of their locations. This example shows 1931 on the left and 2009 on the right. Notice how the tree on the left side of both photographs has grown over the past 80 years.

Between the late 1920s and the early 1940s, a battery of photographers were assigned to document buildings that would need to be removed in the towns surrounding the new Quabbin Reservoir. Pictures were taken of every public structure, house, barn, and outbuilding in these communities, including the towns of Dana, Prescott, Enfield, and Greenwich. A chalk board was placed in the foreground of each photograph, noting the date and

exact mapped location, including an 'X' marking the spot where the photographer stood when the shutter was snapped. In all, 3,000 structures were recorded and catalogued at the State Archives.

At left is a New Salem home owned by the Bullard family as it stood on January 15, 1931. The photograph on the right of the exact same view was taken during the summer of 2009. This view was re-created by bringing a copy of the 1931

photograph into the field and utilizing the mapped 'X' to locate the identical spot to take the updated picture. The Quabbin Visitors Center hopes this study will continue to connect people to the rich history of the area and the sacrifices made by many people in order to provide superior drinking water for past, current, and future generations. For more information, contact the Quabbin Visitors Center at (413) 323-7221. 

downstream

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Downstream is produced twice a year by the Massachusetts Department of Conservation and Recreation, Division of Water Supply Protection. It includes articles of interest to the Watershed System communities. Our goal is to inform the public about watershed protection issues and activities, provide a conduit for public input and promote environmentally responsible land management practices.

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