



A Quarterly Publication from the Division of Fish and Wildlife, RI Department of Environmental Management

Seals in Rhode Island by April Valliere

There are four species of seals observed in Narragansett Bay and Rhode Island coastal waters: **Harbor, Gray, Harp and Hooded** Seals. Seals are part of the suborder of mammals called Pinnipeds (which means fin-footed). Seals are protected under the Marine Mammal Protection Act (MMPA) of 1972, legislation that was passed in an effort to allow seal populations to grow back to sustainable levels after years of hunting.

Seals are streamlined, highly specialized warm-blooded marine creatures that have adapted to life in cold waters with a thick layer of blubber and fur. They have special muscles to open and close their nostrils allowing them to remain closed for their entire dive and only open when they resurface. Seals can slow their metabolism and heart rate during



Photo: J. McNamee

dives to conserve energy and air. Their lungs and blood vessels are especially efficient in absorbing oxygen, enabling them to remain underwater for extended periods of time. After foraging at sea, seals routinely haul out on beaches, rocks or ice packs to rest or for pupping in the northern region. Their flippers aid in their mobility when hauling out, and they are able to retreat quickly back into

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SEAL VIEWING

Seals have been sighted throughout Narragansett Bay, the Sakonnet River and the South Shore Coastal Ponds. Some popular viewing sites are at Rome Point in North Kingstown, Sakonnet Point and Rose Island.

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Wild Places: Rare Gems in Burlingame by Christopher Raithe

Burlingame State Park is known to tourists far and wide because its large campground and fine amenities offer a convenient and economical way to access Rhode Island's south shore beaches. More than 800 camp sites are completely filled during peak visitation, making Burlingame

one of the largest summer shoreline communities. Less well known, however, is that the camping area is imbedded in other large state holdings known as the Burlingame Management Area. Altogether, the state land associated with Burlingame includes nearly 4,000 acres and extends from Watchaug

Plymouth Gentian



Photo: R. Enser

Pond westward to Klondike Road and the Pawcatuck River, and northward to Shumkhanuc Hill Road and Kings Factory Roads. Most of this area is not developed and is only lightly managed for outdoor recreation. Because this area is too large to entirely describe here, the focus of this article

is the area between the camping area and Buckeye Brook Road.

The dominant feature of this section of Burlingame is Watchaug Pond, one of Rhode Island's largest natural lakes. Watchaug is deep in the center, but very shallow around the

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THE DIVISION OF FISH AND WILDLIFE MISSION STATEMENT:

Our mission is to ensure that the Freshwater, Marine and Wildlife resources of the State of Rhode Island will be conserved and managed for equitable and sustainable use.



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Rare Gems in Burlingame by Christopher Raithe Cont. from page 1

edges, especially along the western shoreline where it abuts the state property. These features contribute to making it a high quality fishing and recreation area, as well as a significant rare species habitat. This shoreline supports several species of rare plants, many of which grow in the shallows. One such plant is the Plymouth Gentian (*Sabatia kennedyana*), which grows along the sandy shores of coastal freshwater ponds from Nova Scotia to South Carolina, an environment more typical of coastal plain habitats further south.

The sandy bottom of western Watchaug Pond is also ideal for wading, and small white beaches along the northern shore (accessible only by foot or by boat) make ideal places to contemplate the bustle of the campground from a discrete distance.

A large forested wetland extends from the western shore of Watchaug and eventually ends at the high ground along Buckeye Brook Road. A walking trail (part of the North-South system) skirts the western edge of this wetland and connects the Burlingame camping area to other sections of the management area, but the swamp is relatively inaccessible from this trail. Recent investigations are revealing it to be one of the most interesting wetlands in Rhode Island because it supports one of only two known Rhode Island nesting populations of a warbler known as the Northern Parula (*Parula americana*). Parulas are intriguing because they build their nests almost exclusively of long pendant lichens, sometimes referred to as "old man's beard." Several species of pendant lichens of the genus *Usnea* were formerly found in Rhode Island, but most of them disap-

peared before 1930 or so because of an acute sensitivity to air pollution (particularly sulphur dioxide). With them, the nesting Parulas also disappeared. For many decades Parulas were not known to nest in Rhode Island until they were eventually re-discovered, along with the pendant lichen

(*Usnea trichodes*) in this swamp.

It is not understood whether the lichens and Parulas always persisted in remote places, undetected by the human eye, or whether they have reappeared here

with the lessening of atmospheric pollution. Some lichens are not only intolerant of pollution, but also benefit from humid conditions and grow more profusely on older trees. For this reason they have been used to indicate the age of forest stands. The Watchaug Pond swamp contains a spectacular forest that consists primarily of old Red Maple (*Acer rubrum*) trees with their gnarly and contorted trunks reminiscent of the living apple trees in the movie, *The Wizard of Oz*. In places,

their large buttress roots form small islands of dry ground in an otherwise sappy place.

As we recognize that many wildlife and plant species need to be managed by cutting and burning their habitats, we also know that many other species need mature woodlands where the best management practice is to do nothing. We don't know the relative contribution of *Usnea* lichens or Parulas to the ecosystem functions of places such as Watchaug but we may infer, simply because these species are present, this site is different from other Rhode Island wetlands and as such is performing a valuable role in preserving the biological heritage of Rhode Island.



Photo: Cornell Lab of Ornithology



Photo: C. Raithe

Species Spotlight: River Otter by Charles Brown



River Otter eating herring

Photo: V. Masson

The River Otter (*Lontra canadensis*) is a member of the weasel family, Mustelidae, which also includes mink, fishers, and long-tail weasels—all furbearers native to Rhode Island. Mustelids possess anal musk glands containing a pungent liquid that is released when they are disturbed, used to mark territories or to convey various messages to other otters.

River Otters are adapted for an aquatic lifestyle. Their bodies are long, streamlined, and muscular. They have a broad, flattened head with a stout neck and small ears and have a long, tapering tail which is about one-third of the total body length. Short legs and webbed feet are used to propel them through the water. Their hair is short and very dense, and their thick under fur provides waterproof insulation against cold waters. The fur is typically dark, glossy brown in color, but can vary from lighter shades of brown to almost black. Long, sensitive facial whiskers are used to hunt prey underwater. Adult male otters on average weigh about 20 pounds but may exceed 25 pounds. Females are smaller, averaging about 15 pounds as adults.

HABITAT AND RANGE: River Otters range throughout much of North America north of Mexico, with the exception of the desert southwest and arctic regions. They can be found in freshwater, brackish, and saltwater environments where there is abundant prey and ample vegetative cover along the shoreline. At one time, their range was greatly reduced in many parts of the United States, because of destruction and loss of habitat primarily due to pollution of aquatic habitats. Protection, regulated harvests, and improvements in water quality have allowed otter populations to recover in most areas. Otters never disappeared from Rhode Island but are more abundant today due to improvements in water quality and the establishment and spread of beavers, which create wetland habitats favorable to otters. Today, River Otters can be found in all of Rhode Island's major watersheds and coastal areas including the larger islands of Narragansett Bay. They do not occur on Block Island.

DIET: Otters are primarily carnivorous and their diet consists of a wide variety of fish species, shellfish, amphibians, and reptiles. They may also occasionally consume birds, insects, and mammals.

Fish are the main food of otters, with slow moving, and schooling species most commonly taken. Otters can cause a great deal of damage in fish hatcheries or stocked ponds where fish are unable to escape capture.

REPRODUCTION AND LIFE HISTORY: Breeding season occurs in early spring. Females are capable of breeding at one year of age. The gestation period may range from 290 to as much as 380 days. Otters have delayed implantation, a process where the fertilized egg does not immediately implant in the uterus but remains dormant for an extended period. Once implanted, the embryos develop quickly. Female otters have one litter per year consisting of two to four young. Born helpless and blind, young otters remain in the den for the first two months of their lives. Maternal dens may be located in an abandoned beaver or muskrat lodge or some type of natural cavity. Young otters will stay with their mother for seven to nine months. Adult males do not participate in raising the young. Males, however capable, generally do not have an opportunity to mate until they are at least several years old and have successfully established their own territories.

Otters have been known to live up to 16 years in captivity, but on average it is probably less in the wild. The oldest wild otter recorded in Rhode Island was 15 years. Adult otters generally lead solitary lifestyles. Otters are territorial and will defend their territories from other Otters of the same sex. Males generally have larger home ranges and will attempt to maintain a territory that includes the territories of several females.

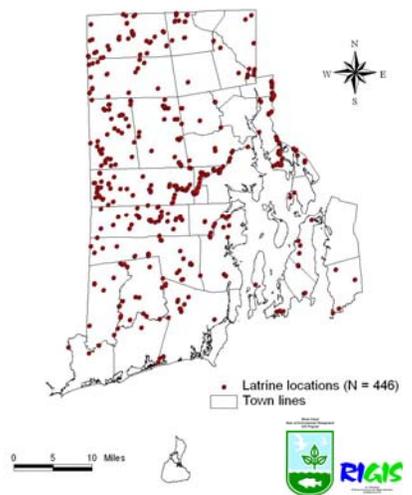
Otters are shy and secretive and, despite their large size, not frequently seen. However, they do leave recognizable signs of their presence. Otters create "latrines" or "haul-outs" which they utilize for defecating, preening, feeding, playing, and scent marking. These latrine sites are often located by specific landscape features such as large conifers along the shore, stream inlets or outlets, on dams or islands. Otters will scrape the ground clear of leaves and pine needles, often forming small mounds onto which they defecate and deposit musk. Any otter passing through the area will visit these sites. Surveys for otters are directed at locating these sites, which in some cases are used over many years by successive generations.

MANAGEMENT: In Rhode Island, River Otters are classified as protected furbearers under general law. In 1970, following a well publicized incident in which an otter was shot (an illegal activity), the state legislature passed general law 20-16-17, which makes the killing, trapping or taking of River Otters illegal in Rhode Island. Today, Rhode Island is the only state in the northeast that does not allow a regulated trapping season for otter.

The Division of Fish and Wildlife collects biological information from River Otters obtained as road-kills. Although it is a small sample size, it provides us with important life history information such as age, diet, and reproductive history. We are collecting various tissue samples for later analysis of environmental contaminants. The DFW also keeps a record of known latrine locations throughout the state and monitors these sites for activity.

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River otter latrines recorded in Rhode Island 2000-2008



Shell Disease and the RI Lobster Fishery by Thomas Angell

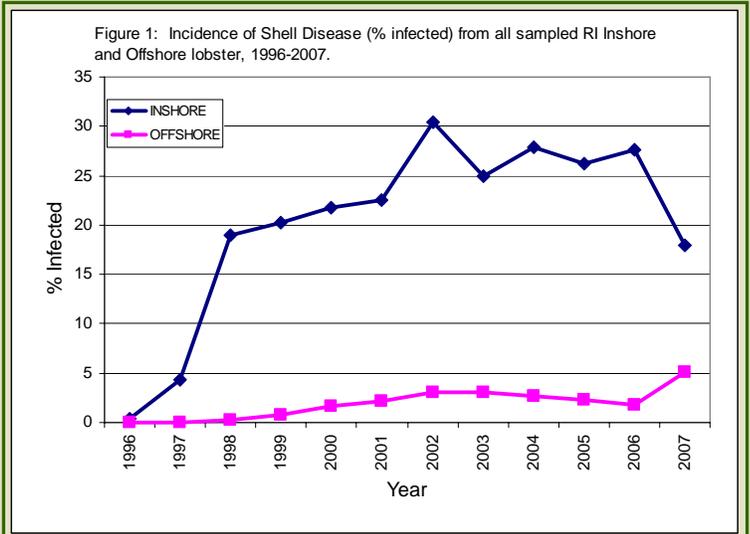


Shell disease of the American lobster (*Homarus americanus*) involves a complex of loosely-related, contagious, low virulence diseases, which manifest themselves by a progressive breakdown and death of the exoskeleton (Rosen, 1970). A variety of chitin-eating bacteria and fungi have been isolated from lobster shell lesions and implicated as causative agents (Rosen, 1970; U.S. Dept. of Commerce, 1989). These include species of bacteria belonging to the genera *Beneckea* (=

Vibrio), *Pseudomonas*, *Vibrio*, *Aeromonas*, *Spirillum*, and *Flavobacterium* (Lightner, 1988; Malloy, 1978); several species of fungi have also been isolated but remain unidentified (U.S. Dept. of Commerce, 1989). Disease is usually restricted to the exoskeleton and tends to spread parallel to the shell rather than into it (Rosen, 1967). In the American lobster, other calcified structures, non-calcified chitinous structures (especially the gill membranes), and epidermal tissues are attacked and become necrotic (Sawyer and Taylor, 1949; Young and Pearce, 1975).

Shell disease is not immediately fatal and infected lobsters may survive for several months (Rosen, 1970). Mortalities resulting directly from shell disease are infrequent, but when infected lobsters are exposed to physiological stress, such as increased temperature or ecdysis (molting), death usually results (Rosen, 1970; U.S. Dept. of Commerce, 1989). In infected lobsters, destruction of the gill membrane by the disease may cause impaired respiration and result in death (Sawyer and Taylor, 1949).

In extremely infected lobsters, death may occur at ecdysis from cohesion of the exoskeleton and subskeleton (melanization), thus trapping the animal in its own exuvium (old shell) (U.S. Dept. of Commerce, 1989). Lobsters may overcome this disease by successfully achieving ecdysis – casting off the old, infected exoskeleton and replacing it with a new, uninfected exoskeleton (McLeese and Wilder, 1964; McLeese, 1965). There appears to be a direct correlation between severity of shell dis-

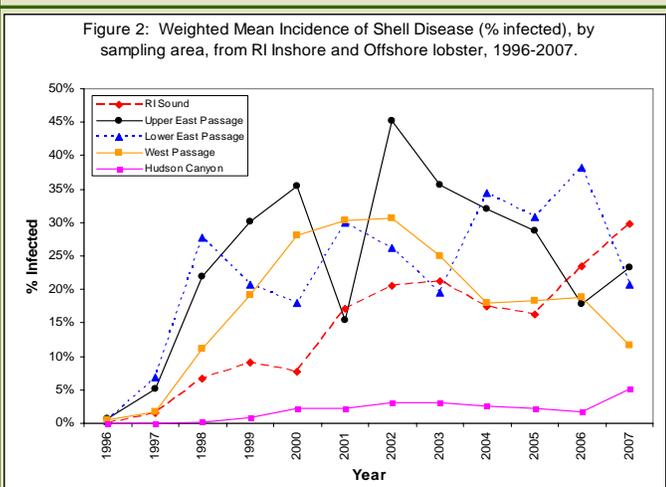


ease and lobster size, with smaller lobsters being less severely infected than larger lobsters. This is probably related to molting, as the molting frequency decreases with increasing size (Warner, 1977) allowing more time for the chitinoclastic bacteria and fungi to spread throughout their host's exoskeleton (U.S. Dept. of Commerce, 1989).

Collection of data regarding the incidence of shell disease on lobsters from the Rhode Island inshore and offshore fisheries was initiated in 1996. Particularly for the inshore fishery (Narragansett Bay and RI Sound), both incidence/frequency and severity of shell disease increased dramatically during 1997-2002, but appear to have stabilized at approximately 25%, an elevated level, during 2003-2007. Incidence of shell disease in the offshore fishery has also increased, although not nearly as dramatically and appears to be stable at low levels of approximately 3% (Figures 1 and 2). Initially, collection of shell disease data was limited to incidence/frequency. Starting in June 2000, data on incidence/frequency of shell disease was expanded to include severity of the infection, based on the percent of body shell (exoskeleton) affected. Severity of infection is categorized as none (0%), low (1-10%), moderate (11-49%), and severe (>=50%).

Larger, mature female lobsters that are carrying a batch of eggs (ovigerous) are particularly susceptible to the affects of shell disease and show a high incidence of shell disease (55-70%), due to an extended period of time between molting events. This extended period of time allows the various shell disease agents (bacteria and fungi) to consume more of the chitin in the body shell. Small lobsters (both male and female) and all male lobsters generally show less

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Seals in Rhode Island by April Valliere

the water when disturbed by humans or predators.

In recent years, the population of seals has grown. Consequently, the number of seal sightings by Rhode Islanders is also increasing.

The most common seal seen in this area is the **Harbor Seal** (*Phoca vitulina*), followed by the **Gray Seal**

(*Halichoerus grypus*). Harbor Seals are distinguished with a dog-like muzzle with "V" shaped nostrils, while Gray Seals have a distinctive horse head with "W" shaped nostrils. Adult Harbor Seals range from four to six feet in length,

while Gray Seals can range up to eight feet. These seals are most often observed in our waters between September and June. However, in recent years there have been observations

year round. Harbor Seals can live up to 35 years, while Gray Seals may live up to 45 years. Harbor and Gray Seals keep their distance from people and often haul-out together in large groups.

These seals usually retreat to the water when approached. With population growth, more northern species are traveling further south to Rhode Island waters. Since the mid-1990s two species of ice seals, **Harp** (*Pagophilus groenlandica*) and **Hooded Seals** (*Cystophora cristata*), visit Rhode Island in the winter months. These two species are called ice seals



because they are from Canada and Greenland, where they spend most of their lives on ice floes. Ice seals are on their own when they are only 12 days old. Harp and Hooded Seals can be seen in New England from mid-January to early May. Both types are social in their northern territory, but they are solitary when hauled out. Ice seals are not typically afraid of people and will not usually retreat to the water when approached. Ice seals can be very aggressive, and they may bite if they feel threatened.

Harp Seals have a white coat at birth, turning to gray and tan and with spots as juveniles. Adults are easily distinguished by the black mark on their backs described as a "harp" (actually more like a horseshoe shape). Male Hooded Seals are able to inflate their hood and may extrude a red balloon shaped membrane from their nostril when aggravated.

While seal populations are on the increase, mortality of these species is primarily attributed to predation, fisheries interactions, and ship strikes. Mystic Aquarium and Institute for Exploration is the primary responder to both live and dead marine mammal stranding calls in Rhode Island, assisted by DEM. Fish and Wildlife biologists and environmental police officers are often called to investigate reports of seal strandings. People should notify **DEM Division of Law Enforcement at 401-222-3070** and call **Mystic Aquarium at 860-572-5955 ext. 107** when they see a marine mammal or sea turtle if the animal appears to be injured or entangled. Mystic will determine if the animal is in need of medical attention, needs to be moved from a populated area, or just needs time to rest.

IF YOU ENCOUNTER A SEAL:

- ⚡ Stay at least 50 yards (150 feet) away. A seal resting on land is not necessarily ill or injured. Seals can stay on land for days without eating or getting wet, but are hardly ever given the chance due to public interest and interference.
- ⚡ Seal warning signs of harassment include increased vocalizations; shaking or body tremors; a resting animal may lift its head with eyes on you; or a seal on the beach may eat rocks and sand.
- ⚡ Seals do not get cold. They have a thick blubber layer. So when a seal is shaking do not put a blanket on the animal or put the animal in a warm car (we have witnessed this!). This will only cause stress, which can kill a wild animal.
- ⚡ Do not feed the seals (they don't like candy canes or oranges, and they don't respond to singing and guitar playing!).
- ⚡ Limit your viewing time and keep dogs away from the seals. Seals bite and they carry diseases. Loud noises and quick movements will scare or agitate seals.
- ⚡ It is illegal to touch, feed, disturb, or harass seals.

The Interns of the Great Swamp by Marissa Valente

Imagine a warm breeze whisking through the forest, the birds are chirping, flowers are beginning to bloom, and animals are waking from their long winter naps. It's spring in West Kingston and to the delight of their ever-busy supervisors, the student researchers of Great Swamp Management Area are pulling into the parking lot.

At 'The Swamp' there are two sets of student researchers who work for 26 weeks. The fisheries interns assist the fisheries biologists in projects such as the state-wide fisheries survey; American Shad, River Herring and Atlantic Salmon restoration; Largemouth Bass tournament surveys; instream flow studies; monitoring for American Eel and aquatic invasive species and assisting with the Aquatic Resource Education Programs. These projects require us to be out in the field in all kinds of weather. Stream and pond sampling for the various projects is conducted by electrofishing using backpack electroshockers and an electrofishing boat. Interns assist by netting, measuring and weighing fish and sometimes wearing the 40 pound backpack shocker. Interns conduct monitoring for outmigrating juvenile American Shad and River Herring using traps, boats and seine nets. More mundane fieldwork includes maintenance of Rhode Island's fishways, using rakes and brushes to clean racks and screens to make sure the fishways remain operational.

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The wildlife interns assist the wildlife biologists with avian influenza and chronic wasting disease surveillance, Atlantic Brant bioenergetics research, monitoring Osprey nesting sites, as well assisting with editing waterfowl regulations and running deer check stations. Wildlife interns also work in the field quite a bit. In the summer they can be found trying to corral Canada Geese and Swans, banding geese and obtaining cloacal swabs for Avian Influenza or surveying Osprey, Swan and Canada Goose nests with their binoculars. In the fall, wildlife interns are busy collecting

deer heads, aging the animals and dissecting their brains to remove lymph nodes and the brain stem or obix to test for Chronic Wasting Disease. Wood Duck boxes are also checked and repaired or replaced in the fall.

Some of our other duties include GIS mapping, data entry and analysis, creating informational pamphlets for the public, mounting and aging fish scales, answering phones and other office work. We all have specific guidelines to follow to ensure

our work is done as efficiently as possible while gaining experience in both laboratory and field settings, going to college, and being involved in other activities outside of 'The Swamp.'

Our current crop of interns are either pursuing their undergraduate degrees or are recent graduates. We come from a variety of schools including the University of Rhode Island, the University of Delaware, Roger Williams University, Eastern Connecticut University and Providence College. Our collective experience ranges from showing dairy cows for eight

years, assisting with piping plover nesting enclosures, working as a field technician for the Narragansett Bay Coyote Study, an internship in Africa for the Cheetah Conservation Fund, beekeeping, studying abroad in Ecuador and the Galapagos Islands, tropical fish culture for New England Marine Orna-

mentals - one of Rhode Island's only tropical fish farms, fishery caretaking at East Farm, working with biofuel related topics at the Institute for Sustainable Energy at Eastern Connecticut University, researching seahorse culture techniques in the Marine Laboratory at Roger Williams University and presenting the results at the Northeast Aquaculture Conference and Exposition. Over the years, our group of co-workers and family at 'The Swamp' has not only made our jobs challenging and rewarding, but fun learning experiences.

If you are interested in applying to be a Student Researcher with the Division of Fish and Wildlife, applications are available online at: www.dem.ri.gov/jobs/seasonal.htm. Applications are accepted beginning in January and internships can start as early as April 1.



Photo B. Tefft



Photo A. Libby

All photos by M. Valente unless otherwise indicated.



Kids Corner! Presented by the Aquatic Resource Education Program

FAMILY ICE FISHING

Winter is here, and cold weather means lots of great outdoor activities for the whole family, including ice fishing! RIDEM Fish and Wildlife is preparing to stock several ponds before the ice forms solely for our ice fishing anglers. Never ice fished? Before taking that trek to the pond with the family, join DEM Division of Fish and Wildlife's Aquatic Education program for a half day training workshop: Ice Fishing 2009.

The ARE program will be reintroducing its annual ice fishing training program to Rhode Island this upcoming January at the Carolina Trout Hatchery. The workshop will review the equip-

ment needed to have a successful ice fishing day, will demonstrate how to use an auger and set up a fishing rig, and will cover ice and cold weather safety. Ice permitting, participants will have a hands-on fishing experience on a pond stocked with fish. The program is scheduled for January 24, 2009 from 9AM-12:00PM regardless of ice conditions. Hot chocolate is included! Families with children 10 and up are encouraged to participate. Fee is \$15.00 per person and \$10.00 for each family member for families of 3 or more. Space is limited and registration is required. For more information and registration materials, please contact Kimberly Sullivan at (401)789-0281 or e-mail at kimberly.sullivan@dem.ri.gov.



Photo: A. Williams

ANIMAL TRACKS

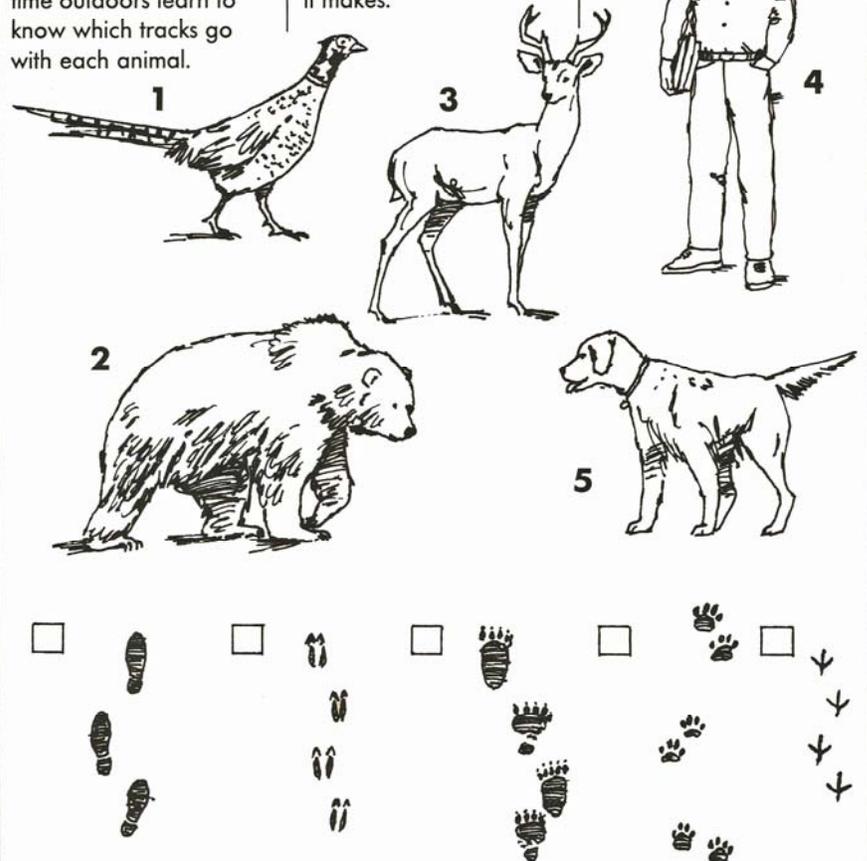
Colder weather is around the corner and many animals are settling down for the long winter. While animals may seem scarce during these months, you may still see some clues that they have been around. Every land animal leaves tracks that can be easily seen in snow or mud. Here are some common animal tracks you may find in Rhode Island:



Have you ever seen animal tracks? All land animals and birds make tracks. People who spend time outdoors learn to know which tracks go with each animal.

DIRECTIONS:

Below are pictures of tracks and wildlife. Match the animal with the tracks it makes.



Lobster Shell Disease by Thomas Angell continued from 4

Calendar January–March 2009



incidence of infection (10-20%) due to a higher frequency of molting. Legal-sized females that are not carrying a batch of eggs (non-ovigerous) also have a lower incidence of shell disease than ovigerous females. This is because most of these females have recently molted and grown to become a legal-sized lobster. Lobsters that have recently molted generally do not show any signs of shell disease because they have lost the “old” shell and produced a “new” shell.

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January 24—Ice Fish 2009. An educational experience offered by the Aquatic Resources Education Program see page 7 for details.

January 29—February 1.—Providence Boat Show, Rhode Island Convention Center. For more information visit: www.providenceboatshow.com.

March 4, 11, 18 & 25, 2009 – Blackstone Valley Fly Tying 2009 presented in cooperation with the ARE program, Trout Unlimited Chapter 737 and Blackstone Valley Corridor US National Park Service. 7pm – 9pm. Space limited. **Registration required.** For more information contact Kimberly Sullivan at (401) 789-0281 or kimberly.sullivan@dem.ri.gov.

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