

How do Hares and Newts Spend *their* Winter Term?

By JANE HARRIS '74

Why is there controversy over Middlebury's Winter Term? Winter Term means that I can be absorbed in a paper concerning water-retention properties of a lichen thallus knowing that I won't have to interrupt my thoughts to do organic chemistry problems. I can read D. H. Lawrence during January for a course and not have to shatter the aura with math homework. Winter Term is also a marvelous opportunity to embark on a month's internship at Middlebury Union High School and emerge fully confident that teaching high school biology is not the right vocation for me.

I reflected on this as I climbed (and fell) up the icy trail to the rabbit study area. I had climbed this hill twice a day with Sue, Gerry, and Mark all through January, and it seemed the boiler-plate ice was always covered with enough new snow that we each knew we would have to slip when we tried to dig our toes into the hill, but we didn't know just when.

During the Winter Term, four of us* had continued the study of the snowshoe hare population in the High Pond Nature Reserve near Brandon. The object of our course, "Winter Ecology," directed by Professor Woodin, was to experience the kinds of problems and obstacles ecologists encounter in their research. Our study of snowshoe hares concerned the size and makeup of the population, the home ranges of individual hares, and their subsistence base. Our data were obtained by extensive live trapping as well as by radiotelemetry . . . collaring the rabbits with radio transmitters and tracking their movement with remote receivers.

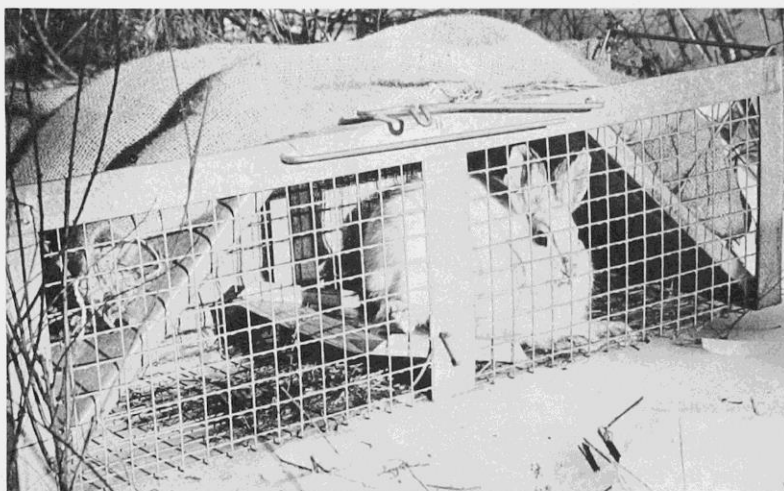
Other students at High Pond immersed themselves in other aspects of winter ecology: Valerie Brown '76 and Bob Hillier '75 analyzed organic sediments in the lake and constructed a profile of thermal stratification and dissolved gasses.

*Sue Martin '75, Gerry Szal '74, and Mark Patlovich '74

Andy Cohen '76 studied the winter migrations and activities of the common spotted newt in High Pond.

Sampling the bottom of a Vermont lake in mid-January can pose problems—first, the foot of ice between you and the organisms or sediments you want to study. After spending an hour sawing a hole in the ice large enough for the sampling

student from Bucknell, Robby Munier '75, and graduate-student Ned Williams. After cutting a 10 x 15 foot hole in the ice, these courageous men, sporting the latest fashions in wet suits and scuba gear, braved the icy waters of High Pond in search of newts. Fortunately the afternoon was sunny and unseasonably warm. The divers reported that although the



dredge, you are ready to collect your sample. But in the process, the newts have been scared away and you must wait a couple of hours for them to resume normal activity. By that time the hole in the ice is beginning to freeze up again . . .

Most of the information for the newt study came through direct observations by scuba divers James Callahan (principal of the Mary Hogan Elementary School in Middlebury), Jack Chearmonte (engineer for Simmons Precision in Vergennes), Jim Potdevin, an exchange

water was very cold, the visibility was stupendous and that walking upside down on the icy ceiling was a magnificent experience! An abundance of newts were observed and some captured for transport to the lab for further study. Thus, Andy, Middlebury's newt investigator, was able to gather a significant amount of data concerning winter activity, migration, feeding habits, and mating behavior of the spotted newt (*Notophthalmus v. viridescens*).

Meanwhile the sun was beginning to set and we realized that we should trudge back through the snow to make our afternoon trap check. We left the lake and the



Whudeye-do? wonders snowshoe hare in brief thrall.

chilled divers for our excursion to the 14-acre study plot and our 24 Hav-a-hart traps. We climbed the icy trail and slid in the fox tracks that crisscrossed our path. A large black porcupine, settled into the crotch of a beech, watched us placidly as we passed.

Trap 5 was sprung and in it was a hare we had not previously caught. Pulling the burlap bag out of my pack, I placed it over the end of the box trap while Mark Patlovich '74 opened the trap door. The rabbit bolted into the bag and jumped around frantically. Sue Martin '75 hung the bagged rabbit on the scale and it weighed in at 3.8 pounds. Gerry Szal '74 then took the rabbit out of the bag, taking care to hold its powerful hind legs securely and keep its eyes covered. (We found that the hares would remain fairly calm if we covered their eyes while we worked with them.) We set to work to measure its hind foot length (14 cm) and its ear length (9 cm) and to staple a metal tag in its ear for future identification. Foot and ear lengths indicate the animal's age. This one was an adult and probably two years old.

Although we were apprehensive about the ear tagging at the beginning of the study, fearing the piercing tag would hurt the rabbits, fortunately the hares never gave any indication of pain. After

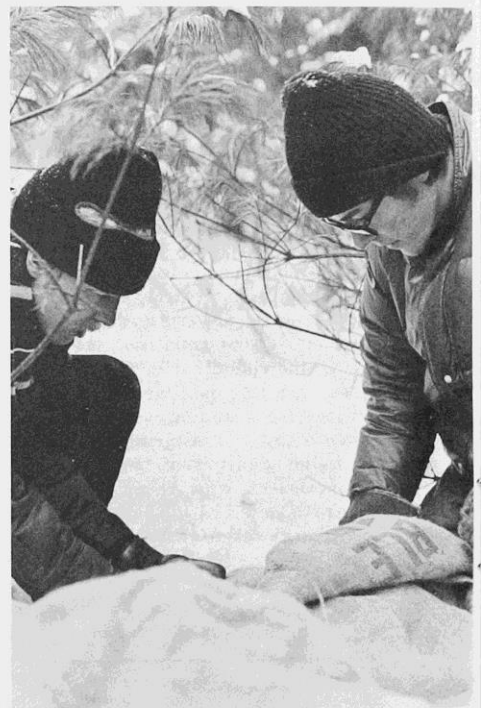
Daintry Heap '75 determined that the hare was a male, it was released. As newly tagged "No. 8" scampered into the woods, we recorded the essential data and resumed our rounds. We found three rabbits that had previously been tagged, munching the alfalfa bait and waiting for us to free them.

In addition to the home-range data obtained by trapping, we employed radio-telemetric methods for a week during the Spring term to trace the daily movements of two of the hares. These rabbits were fitted with radio-transmitter collars of different frequencies so that we could distinguish the signals. Then the four of us stationed ourselves around the area perimeter with radio receivers and walkie talkies, triangulating to determine the position and movements of each rabbit. Thus we were able to map where the different hares had traveled throughout the tracking session. At the end of the week we retrapped the rabbits and recovered the collars.

Winter Term at High Pond was filled with sport and excitement. We heard, and found the tracks of, a coyote pack that traversed the rabbit study area, and occasionally sighted wild turkeys near the research station. There were moments of frostbitten fingers and toes during



Above, Sue Martin '74 and friend weigh bagged hare; below, seniors Gerry Szal and Mark Patlovich reset trap, which is burlap-sheathed to prevent freezing of next occupant.



afternoon trap checks in -20 degree weather, as well as cross-country skiing excursions and tobogganing. Most important, though, Winter Term gave us a chance to examine different aspects of winter ecology and experience the difficulties of setting up independent research. We were able to set up and carry through our own projects, revising procedures and methods when necessary, and to compile and analyze our data. With the help of Dr. Woodin and Andy Livak, and the generosity of Douglas Burden who owns the High Pond Reservation, we enjoyed a very successful and enlightening Winter Term.

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Intrigued by Miss Harris's report, we looked up Professor Howard Woodin, director of the ecological studies, and asked for a further fill-in on Winter Ecology investigations at High Pond: "We had a couple of objectives," he said. "One was to find out where these spotted newts were. We knew they were in there; in the fall of the year you can see hundreds and hundreds of them all along the shore line, right from the shore. But then as winter gets close and the lake begins to look as if it's going to freeze over, they disappear and we figured that they went out into deep water—there was no question about that—and we thought maybe they went down into the mud and hibernated, but instead of that, the divers found that they were crawling around on this mud-water interface—which is very jelly-like but the newts were able to maintain themselves because they have pretty near the same specific gravity as the water down there—and apparently they were active, fooling around. We didn't know that before.

"I think maybe one of the reasons why they're out there is, there are all kinds of little worms that crawl around on the surface of the mud, or are imbedded in the mud and that's what the newts feed on. Certainly the water is no warmer down there than it would be close to shore. They were never in water less than 8 feet and they seemed to go on out as far as the divers could see from that hole, which meant that the water was maybe 20 feet deep or so—we don't know how much further.

"The sunlight came right through that ice and the divers were fascinated; they really didn't need their flashlights; they took some pictures of the ice from underneath, but they never did really get me



Rabbits' eyes are covered to keep them quiet during measuring.



Jim Callahan and Jack Chearmonte make final equipment check before going below in search of spotted newts; newts don't hibernate, but feed on bottom all winter.

the pictures of the bottom that I wanted. You could see them walking around upside down on the bottom side of the ice; it was fascinating. Those guys went crazy; they've never done this before and I had the damndest time trying to get them to do the few simple things I wanted them to do because when they got down there, apparently the ice has little undulations underneath and they just had a big time under there and I couldn't

get them out! It was getting late and I wanted to go home and I started loading the vehicles but they didn't want to leave!

"The first two weeks of the Winter Term, we didn't have any snow for the first week or so and we weren't having very much luck with the course because most of what we were doing required snow. But then all of a sudden we got snow and it was deep! So then we



"How's the water?" High Pond kibitzers, in usual order, are Ned Williams, Jim Callahan, Prof. Howard Woodin, Andy Livak, Eric Eastman, and (kneeling) Jack Chearmonte.

couldn't get the four-wheel-drive vehicle in there any more; so we had to come in with a snow cat—this ancient snow cat that Andy's got for working the ski trails, down there. That thing is about 30 years old. You can't believe it, it looks like some old airplane out of World War I; it sounds like it too! So we had to load all our stuff in that and a skimobile.

"Winter ecology is very slow. Everything you do takes three times as long as it does in the summertime. Just everything. And the weather bothers you; I mean there are so many days you can't go out. There were lots of days they couldn't set the traps because of poor weather; it turned rainy or something like that, or very cold. I wouldn't let them set the traps if it got anywhere near zero. We have in the past lost rabbits, when they're inactive like that when it's very cold. That's the reason for this burlap bag that goes over the trap—to

cut the wind. So we never lost any rabbits. Well, I guess they lost one at the very end; they were trying to put the collar on, and the foolish thing just died of fright. Rabbits can go into hypoglycemic shock—their blood sugar gets so low. Even though they've got fat on the body, they'll go through a hypoglycemic shock and die. But we were very fortunate; we didn't lose many of them.

"Another problem with this kind of project; we've known for years that rabbits become "trap happy" and we're afraid that instead of travelling around doing their own thing, they keep returning to the traps for their food. Well the same thing happens to turkeys, you know; in the early days when they raised wild turkeys in pens and then let 'em out, the damn things would never go off and be on their own—they would always hunt up some barnyard and the first barnyard they came to, they would be in with the

chickens. It took a long time before the breeders could find a method to get those young turkeys to go out by themselves.

"So that's one of the reasons we wanted to develop this radio telemetry, because then the hares would be more on their own and we could see what they were doing. Before they were through they had put tags on something like 10 rabbits, but we didn't know whether they were all from just that one area or whether there was some kind of a shuffling about of the population. Some of the early tags we never picked up again; we only picked 'em up two or three times and then they'd be gone and we wouldn't see them for the rest of the season. It may be that they left the area and went somewhere else and new rabbits came in to take their place. We came to the conclusion that, at any one time, probably only five rabbits really lived in that one little area we were working with." □