

## ENCOUNTERS BETWEEN OTTERS (*Lontra canadensis*) AND AMERICAN BEAVERS (*Castor canadensis*)

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**ABSTRACT:** Six encounters between otters (*Lontra canadensis*) and American beavers (*Castor canadensis*) were observed between 1997 and 2003 at Wellesley Island State Park, New York. Contrary to the observer's expectations, in each case the beaver moved aggressively toward the otter or otters, and the otters retreated. The author offers detailed accounts of each of the interactions, which may offer some insight into the relationship between otters and beavers. In half of the encounters, the beaver appeared to the observer to be intent on keeping otters away from its lodge. The beaver was not, however, always successful.

**KEY WORDS:** American beavers, *Castor canadensis*, interspecific aggression, *Lontra canadensis*, river otters.

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### INTRODUCTION

A commensal relationship between otters and beavers has been documented (Polechla 1988), and the use of beaver ponds for foraging and beaver lodges for denning is regarded as characteristic behavior of otters (Melquist and Hornocker 1983). Additionally, reports of beaver hair in otter scat have suggested the possibility of otter predation of beavers (Green 1932, Greer 1955). Observations of otters killing beavers have also been documented in the popular literature (e.g., Long 1901). However, most authorities do not consider beavers to be the prey of otters (Whitaker and Hamilton 1998).

### STUDY AREA

Wellesley Island is a roughly 6 km by 10 km island in the New York portion of the St. Lawrence River (Fig. 1). The principal bay along the headland, Eel Bay, is roughly circular (radius  $\approx$  1 km) and contains 3 large islands, each of which have beaver development almost as extensive as that on Wellesley Island. The two principal channels of the St. Lawrence River on either side of Wellesley Island usually remain open through the winter. Otters and signs of otters have been observed along the shores of the channel, in the bays, and on all the surrounding islands.

Wellesley Island State Park on the headland of Wellesley Island was created in 1969. Since the early 1970s, beavers have created ponds in a 500-hectare area of the Park that consists of fields, former pastures, and swamps. Otters have been observed in the ponds since the mid-1980s. From 1997 to 2003, at the peak of development of the area by beavers, there were 6 principal ponds (see Fig. 1) varying in size from 2 to 4 hectares. These ponds were inhabited by 5 colonies of beavers. Otters foraged in the ponds and made latrines, scent mounds, rolling areas and dens around the ponds and on beaver lodges in the ponds.



**Fig. 1.** Southern section of Wellesley Island, New York, USA showing the location of 6 beaver ponds created in Wellesley Island State Park (A-F).

The New York State Department of Environmental Conservation manages the State's otter population but does not publish estimates of otter population and density. In 1997, the local conservation authority assumed pollution in the St. Lawrence to be keeping otters away from the study area (J. Lamendola, New York State Department of Environmental Conservation, personal communication). Others also doubted that there were otters in the study area (e.g., E. Slate, self-employed trapper, personal communication). However, during the study period I consistently saw one family group in the ponds from July through November, ranging in size from 2 to 5 otters. On October 17, 2002, I saw 6 otters on a beaver lodge. Beginning in 2002, I was able to distinguish a group of adult otters foraging in the bays of the St. Lawrence River from the mother and pups that I saw in the beaver ponds. Thus in 2002, I was confident that there were at least 10 otters using the area I observed. Although at no time during the study period could I confidently describe the core area of the otters I watched, I was able to track the otters from pond to pond and into South Bay. In addition, from following slides in the snow, on January 17, 2003, I was able to track a mother and two pups from Eel Bay to Pond E via Pond F.

## METHODS

In 1994 I began making observations of otters on Wellesley Island. The observations of otter-beaver interactions outlined here are byproducts of regular visits to the island swamps and surrounding river. During a 6-year period (1997 to 2003) animal behavior observations were made 3 days a week for at least 3 hours a day. During observations, I waited by a pond for a minimum of 20 minutes before moving on to the next pond. I varied my sequence of observations (i.e., going from Pond F to Pond A or vice versa) depending on the wind direction. I varied the timing of my observations until I discerned a pattern in the otters' behavior. When there was no evidence in the latrines suggesting otter activity, I observed the beaver colonies in the ponds in the evening or early morning when they were most active. All animal observations were recorded with an 8mm analog camcorder.

Generally the animals seen in the ponds did not interact. For example on August 15, 2002, just after dawn during a very dry summer, I watched a mother otter and her 2 pups fish for shiners in a small pool of water near Pond D. As the otters fished, so did 2 blue herons. However, the 2 species did not visibly notice one other. On another occasion, the evening of May 17, 2000, when I was observing 3 otters foraging along the south shore in Pond B, a beaver was seen in the pond as well. The beaver swam around the otters, and the otters interrupted previous activity to watch the beaver swim away. Here I will discuss only cases (which I will call "encounters") in which there was at least a face to face confrontation, possibly followed by aggressive or strategic movements.

## RESULTS

Sightings of otters in beaver ponds were common. For example, in the fall of 1997, from September 1 to November 5, otters were observed 15 of the 30 days I visited Pond D. However, during the same period I only saw otters and beavers in Pond D at the same time on 3 occasions. Over the entire 6-year study period, during which I made 107 observations of otter, I saw otters on a beaver lodge 46 times, but only on 6 occasions was I able to video beavers and otter encounters (Table 1).

**Table 1.** The date and time of each otter-beaver encounter, the estimated duration of the actual encounter, and the distance between the observer/video camera and the encounter. (Copies of the associated video clips are available from corresponding author upon request.)

Encounter No.	Date/time	Duration of encounter	Approximate distance from encounter (m)
1	15 APRIL 02/ 0800	10 minutes	30
2	3 NOV 2000/ 1800	60 minutes	60
3	17 OCT 1997/ 1600	60 minutes	40
4	26 AUG 02/ 0900	15 minutes	40
5	5 JUNE 2001/ 1000	15 minutes	3-30
6	13 MAR 02/, 1500	3 minutes	20

**Encounter 1:** On the afternoon of October 17, 1997, I approached Pond D from a ridge south of the pond and was surprised to see a beaver out earlier than usual bringing a branch up from the pond below. The beaver carried the branch over the dam and to the lodge 10 meters behind the dam. Four otters then swam toward the beaver lodge from the northeast end of the pond. I followed the progress of 1 otter with a camcorder. The otter swam to within 1 meter of another unidentified animal in the pond, screeched and veered away. That animal made a splash not unlike the splash beavers make when they move their tail and body but do not lower their head in the water. The otter continued to the top of the lodge, where it joined the other otters. I then heard a louder splash from a beaver slapping its tail in the water on the other side of the lodge. The otters subsequently left the lodge, though not in haste, and began foraging for fish in the pond. I lost track of the beaver, but while the otters swam in the pond, a beaver swam below me coming from the southeast corner of the pond and, I think, going over the dam. The otters continued up pond out my range. Several minutes later, I picked them up with the camcorder as they swam back toward the lodge. Then I heard a screech and saw that the otters stopped as a beaver swam toward them. There was a faceoff

for several seconds with an otter screeching and 2 of the otters raising themselves out of the water some 5 meters from the beaver. The beaver approached closer and the otters turned and swam away.

**Encounter 2:** I approached Pond F just before dark on the evening of November 3, 2000, to watch beavers cutting ash trees that line a smaller pond just on the other side of a causeway. I saw four otters visiting a latrine in a clearing around a covered bench on the north shore of the pond. The otters returned to the pond and I saw a beaver swim from its lodge 3 meters off the north shore of the pond. The beaver swam around its cache and then toward the otters in a roughly straight course for 30 meters or so. The otters swam to the west shore of the pond and foraged for fish in their usual methodical fashion along the marsh. The beaver followed a short way, but there was no confrontation with the otters. The beaver swam back to the middle of the pond and then toward its lodge. Roughly 30 min later the otters foraged down the middle of the pond toward their latrine around the bench and the lodge. A beaver swam toward them on a course interrupting their progress with 1 otter almost surfacing next to the beaver. The otters dove and disappeared from view. Several minutes later, as it grew darker, I heard screeching from the north shore of the pond. Then I heard and barely saw a beaver splash its tail next to the lodge. Then I barely saw otters on the lodge and heard them screeching loudly. I was unable to see where the beaver was or where the other beavers in the colony were.

**Encounter 3:** As I crossed the dam of Pond A in the late morning of June 5, 2001, I saw an otter swimming up the stream that forms a small narrow pond below the dam. The otter disappeared in the cattails below me. When it noticed my presence, it scrambled through the vegetation to the south end of the dam and gained the pond above. It swam back and forth in the pond and snorted at me. Then I saw a beaver swimming toward us from the direction of the north shore of the pond. The beaver began to chase the otter, getting to within 5 meters of it. The otter could swim fast enough to stay ahead of the beaver and also stopped and screeched at the beaver. The chase continued in a circle. Then the otter increased the distance between them as it swam toward the north shore. The otter continued up the pond in the direction of the beaver lodge and disappeared. I did not see the beaver following the otter.

**Encounter 4:** On March 13, 2002, in the early afternoon, as I walked up the northwest shore of Pond C in the late morning of a thawing day an otter appeared in the open water along the shelf of winter ice on the pond and snorted at me. I sat down on the shore and the otter soon swam to the edge of the ice about 20 meters away and climbed up on the ice, keeping me in view and now and then snorting at me. It also swam in open water between the ice shelf and a beaver lodge on the edge of north shore of the pond just east of the dam. A beaver emerged from the lodge and swam in a circle in the open water in front of the otter. Neither animal reacted to the other. The beaver swam under the ice and emerged in the open water of the south shore of the pond some 50 meters away. Several minutes later another beaver emerged from the lodge, circled in front of the otter, then fetched a branch from the water around the lodge, took it to the dam, and ate its bark. A few minutes later another beaver emerged from the lodge, circled in front of the otter, then swam below me, dove under the ice and emerged in a patch of open water where there were logs to strip. The otter remained on the ice when the beavers swam in front of it, attentive but not reacting. Several minutes later, as the beaver by the dam swam back to the lodge it made a 90 degree right turn, and swam straight toward the otter about 5 meters away. The otter slipped into the water just as the beaver lunged toward it. I lost sight of the both animals, then the beaver emerged in the same area and the otter emerged through a hole in the ice about 30 meters from the encounter and 20 meters from me. It then dove and surfaced in the water close to me, snorted at me and eventually got up on the ice again, though farther from the beaver lodge. The other beaver continued eating along the northwest shore of the pond and I saw 2 more beavers along the south shore of the pond.

**Encounter 5:** Just after dawn on April 15, 2002, I went to watch the beavers in Pond E. As I approached I heard a beaver slap its tail, which was an uncharacteristically precocious response to my well concealed approach. When I gained a view of the pond and tried to see how many beavers were in the pond, I saw a beaver swim West and slap its tail. Then I saw an otter swimming down from the West end of the pond, past where the beaver had been and up into the Northeast end of the pond. I lost sight of the otter, but then saw it again as it swam back to the West. The otter then turned toward the dam at the south end of the pond, craned its neck toward the beaver, then swam toward the dam. About 5 meters above the dam I saw a beaver in the water facing the direction from which the otter approached. The otter swam to the right of the

beaver, who remained motionless, and then went up on the slope to a latrine. The otter sniffed the ground, then when up the slope where I could not see it and remained there for about 4 minutes. The beaver swam over to where the otter had left the pond and faced that direction. As the otter came back down to the pond it screeched persistently, and the beaver turned and dove into the water. The otter slipped into the pond and swam up-pond keeping its head higher in the water than usual. The otter remained along the south shore of the pond, looking up in my direction. A beaver swam along that shore and slapped its tail. When the otter left 2 beavers stripped bark off a large cherry tree they had cut below where I was sitting.

**Encounter 6:** On the morning of August 26, 2002, I went to Pond C to watch the beavers who that summer had often stayed out in the pond until 9 am. I watched 5 beavers gravitate to feeding and foraging areas closer to their lodge in their usual slow fashion. I then watched as one by one, they retired to the lodge in the middle of the pond, except for 1 beaver who lingered along the south side of the lodge. Then I saw 3 otters swimming along the south shore of the pond as the beaver doglegged toward the lodge. The otters pulled up on a log about 30 meters from the lodge and looked in the direction of the beaver. Then one after another the otters left the log and swam toward the lodge. The beaver swam toward them. I was unable to see their confrontation but I heard a beaver tail splash and then saw the 3 otters swimming back along the south shore away from the lodge and heard an otter screech. I saw the beaver swim back to, and then into, the lodge. A few minutes later I saw the otters in the far Northeast end of the pond which they could have gained either by swimming under water around the lodge, or by crossing a spit of land that divides the east end of the pond.

## **DISCUSSION**

Studies of interspecific aggression in mammals, outside of the predator-prey relationship, are few and generally address competition between species with similar prey and habitat (McDonald 2002). I am aware of no studies of aggression between otters and beavers. Melquist and Hornocker (1983) detected instrumented otters sharing a lodge with beavers, but “were unable to detect any overt aggression between otters and beavers.”

In each of the encounters I described above the beaver approaches the otter or otters seemingly without hesitation. In all but Encounter 3, which occurred in early June when there were likely kits being nursed in the lodge, the beaver at some points turns its back on the otters. In Encounters 1, 2 and 6, I am confident that the beaver is trying to keep the otters away from its lodge. I observed otters on the beaver's lodge and swimming into the lodge the day before Encounter 1, and on the lodge on the day before Encounter 2. Additionally, a week after Encounter 1 (on October 24), I saw what appeared to be the same group as was involved in the encounter on the winter cache of the lodge in Pond D and saw an otter swim into the lodge.

In each of the encounters only 1 beaver concerned itself with the otters. Between the brief early interaction in Encounter 1 and the later standoff, a beaver swam through Pond D seemingly oblivious to the otters still foraging there. I also frequently observed other beavers in each of the ponds before and after the encounters. Three or 4 beavers were visible in Pond C during Encounter 4. At least 3 beavers were in the pond during Encounter 5, and I saw 5 beavers enter the lodge just prior to Encounter 6.

The behavior of the beavers during these encounters suggest a lack of fear of the otters. In 5 of the encounters the otters seemed surprised by being confronted by a beaver. In Encounter 5 the otter appeared “annoyed.” An otter screeched at the beaver in all but Encounter 4. Although the otters moved to avoid the beaver in all but Encounter 5, the otters did not leave the pond, or, in the case of Encounter 3, take the quickest route out of the pond. In Encounter 4, the otter dove into the water to avoid the lunging beaver and, evidently, rather than engage the beaver while under water, fled (emerging from a hole in the ice well away from the beaver).

None of the encounters took place during the period of winter when otters are prone to breach beaver dams (Reid et al. 1988). Additionally, in none of the encounters did the beavers seem to protect the dam or, in the case of Pond F, the drain.

## CONCLUSIONS

While encounters between otters and beavers seem incidental in the life history of each animal, they do provide interesting insights. Although my observations suggest that some beavers make an effort to keep otters off their lodge, there is no evidence that the effort is sustained or that the entire beaver colony is involved. Otters in these encounters also did not attack beavers even if encounters occurred while the otters were foraging for food. However, although otters are the first to disengage from an encounter with beavers, there is no evidence in these encounters that otters change their use of beaver ponds because of the encounter.

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