

WESTERN GREBE PARASITISM OF RED-NECKED GREBE NESTS ON DUCK LAKE IN THE CRESTON VALLEY, BRITISH COLUMBIA

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The Red-necked Grebe (*Podiceps grisegena*) and Western Grebe (*Aechmophorus occidentalis*) are common breeders each summer on Duck Lake, a large shallow water body within the Creston Valley Wildlife Management Area near Creston, British Columbia. Since both species essentially require the same habitat components (*e.g.*, nest sites and materials; Figure 1) there is a strong likelihood that interactions between them exist. In 2003, I documented an instance of a pair of Red-necked Grebes incubating eggs and successfully rearing Western Grebe young on Duck Lake (Van Damme 2004).

In that article I offered plausible explanations for this behaviour. First, it could be weather-related in that Red-necked Grebes settled on Western Grebe nests with advanced incubation following a severe wind storm. Secondly, in an effort to have a successful, but shortened, breeding season, adult Western Grebes prior to the storm had laid additional egg(s) in



Figure 1. Western Grebe colony at Duck Lake, BC. 17 July 2006 (Linda M. Van Damme). BC Photo 3444. Red-necked Grebes also build their nests in similar habitats but they are more solitary, and widely spaced, than the colonial Western Grebe.

available nests of Red-necked Grebes who continued with incubation and rearing responsibilities. In this note I present further evidence to support the second explanation.

During the 2004 nesting season Western Grebe productivity was very low, mainly due to storm activity on Duck Lake. During the month of June, when nest-building was initiated, windy, rainy conditions occurred on 5, 25, and 26 June. Many nesting mounds were flooded resulting in the grebes rebuilding. However, wind storms on 3 and 4 July swamped all nests resulting in complete abandonment of the colonial nesting site. The Red-necked Grebes had a more successful breeding season despite the weather but I saw no evidence of them rearing Western Grebe chicks.

The Western Grebes built nests along the southeast shore of Duck Lake during the 2005 nesting season. It was a turbulent period with rain and wind storms on 21, 22, and 25 June; 2 and 15 July; and 10 and 12 August, with wind gusts ranging from 48 to 61 km/hr (Environment Canada 2006). Although the grebes attempted to rebuild their nests after each storm, the site was abandoned on 12 August. Pairs of Red-necked Grebes nested further south along the east shore of the lake and their nests appeared to be built closer to shore. On 12 July, I sighted a Red-necked Grebe adult with a tiny gray Western Grebe chick on its back. This family remained in the same general area until at least 6 August. On 27 July, I observed a second Western Grebe chick approximately one-third grown with a pair of Red-necked Grebe adults. The chick was fed a fish by one of the adults. I observed both of these families on 27 July and 6 August and it was obvious that the Red-necked Grebes were rearing only the two foster chicks and had none of their own. On 17 August, one family was located and the young Western Grebe was well developed in plumage and size and was still being fed by an adult Red-necked Grebe. The 2005 season ended with two pairs of Red-necked Grebes rearing two Western Grebe chicks, one of which was close to fledging.

During the 2006 season, Western Grebes established their nesting colony 200 m from the south shore of Duck Lake, affording excellent viewing through a spotting scope. Six pairs of Red-necked Grebes nested within, or at the periphery, of the Western Grebe colony. During the night of 7 July

(0045 hr) a heavy rain storm with winds gusting up to 59 km/hr (Environment Canada 2006) with resulting wave action once again wreaked havoc on nesting grebes. In the aftermath of the storm I walked the shoreline of Duck Lake at 0600 hr searching for nests that had been displaced and blown to shore (Figure 2). I located 12 nests with eggs intact, however later in the day all eggs had been predated. I found two Forster's Tern (*Sterna forsteri*) nests, six Western Grebe, and three Red-necked Grebe nests, but the surprise came when I discovered one nest with three brown stained Red-necked Grebe eggs and two brown stained Western Grebe eggs suggesting that they had been well incubated (Figure 3). The eggs in this nest were measured for species identification (Table 1). All measurements fell within dimensions given for the two species by Storer and Nuechterlein (1992) and Stout and Nuechterlein (1999) confirming the identifications.

With this discovery one might ask "did the Red-



Figure 2. Grebe nests blown ashore at Duck Lake, BC, following a storm on 7 July 2006. Western Grebe nest with three eggs in foreground (Linda M. Van Damme). BC Photo 3446.



Figure 3. Mixed clutch of two Western Grebe eggs and three Red-necked Grebe eggs found in the same nest following a wind storm on Duck Lake, BC. 7 July 2006 (Linda M. Van Damme). BC Photo 3447.

Table 1. Measurements of two Western Grebe (WEGR) and three Red-necked Grebe (RNGR) eggs discovered in the same nest at Duck Lake, BC on 7 July 2006.

Species	Length (mm)	Diameter (mm)
WEGR	61.1	42.0
WEGR	57.4	40.1
RNGR	50.7	35.1
RNGR	50.9	34.8
RNGR	48.2	32.6

necked Grebe lay eggs in the Western Grebe nest or vice versa?" In 12 years of monitoring breeding success I have seen no evidence of Western Grebe rearing Red-necked Grebe chicks, but have observed continuing evidence that Western Grebe is laying eggs in the nests of Red-necked Grebe.

Not all nest mounds were unanchored during the 7 July storm and 15 pairs of Western Grebes returned to intact nests within the colony. Adult Red-necked Grebes returned to only two nest sites occupied prior to the storm. On 17 July, a tiny, gray downy Western Grebe chick poked its head out through the back feathers of an incubating Red-necked Grebe adult at the south east periphery of the Western Grebe

colony. The adult Red-necked Grebe stood up and the Western Grebe chick fell into the water as did a tiny, dark, stripe-headed Red-necked Grebe chick. The mate of the Red-necked Grebe arrived with a fish that appeared tiny, but seemed too large for the Red-necked Grebe chick so was offered and eagerly taken by the Western Grebe chick. A second attempt was made to feed its offspring, and again the Western Grebe chick was fed, and then climbed onto the adults back while the tinier Red-necked Grebe chick struggled to climb back on.

Both Western and Red-necked Grebe chicks were observed on the back of the incubating adult on 18 July. The Red-necked Grebe mate brought a tiny fish and tried to feed both chicks, but ultimately the adult on the nest swallowed the fish. On 19 July, the adult Red-necked Grebe was sitting on the nest when I arrived, but soon stood up and its own chick as well as the Western Grebe chick fell backwards into the water. Once the adult resettled on the nest, both chicks climbed up the nest mound and onto the adult's back. At 1630 hr a Red-necked Grebe chick still wet from hatching emerged from under the adult's breast. Pushing with its feet and "rowing" with its tiny wings it traversed along the adults body then scrambled up disappearing beneath the back feathers.

A similar scenario occurred on 20 July, but this time when the adult stood, two of its own chicks and the one Western Grebe chick fell into the lake. The little Red-necked Grebes were very agile in the water and could scramble up the nest mound in mere seconds and onto the adult's back; whereas the Western Grebe chick did more pushing with its feet while flailing its tiny wings to regain position. The Red-necked Grebe chicks voluntarily left the adult's back, swimming and diving in the water close to the nest mound, whereas the Western Grebe was always dumped into the water. At 1700 hr a third newly hatched Red-necked Grebe chick was propelling itself along the nest mound when the mate arrived and fed a tiny minnow to the chick.

By the following day, the mixed family of three Red-necked Grebe chicks and one Western Grebe chick were sighted approximately 61 m east of the nest mound where a single, brown stained egg remained. The Red-necked Grebe chicks were constantly in and out of the water, but the Western

Grebe remained on the back of the adult Red-necked Grebe. The mate arrived and fed the Western Grebe chick. Within two hours the family moved back to the nest mound. Another small fish was brought by the mate and again fed to the Western Grebe chick. On 22 July, the family was sighted approximately 23 m east of the nest mound (egg still visible); all four chicks were in the water and observed climbing onto the adult's back for brooding. When viewing the chicks together like this, it was apparent that the Western Grebe was larger in size. Within a day of hatching the mass of a Western Grebe chick ranges from 21.7 to 36 g (Storer and Nuechterlein 1992) whereas the Red-necked Grebe chick averages 17 to 23 g (Fjelds  1977).

All young were riding on the back of the adult Red-necked Grebe, about 61 m east of the nest mound (egg still visible), on 24 July, but were soon dumped into the water as the adult arched up. The adult vigorously preened its breast and abdomen, freeing loose tiny downy feathers, which it fed to all four chicks. The Western Grebe chick appeared to only want to return to the adult's back and as I watched, the adult shifted its position, thwarting the chick's efforts. The Western Grebe chick then acted aggressively toward one of the Red-necked Grebe chicks, by jabbing at it with its bill. Once the adult finished preening all young were allowed to climb onto its back. All four chicks were located on 25 July with the Red-necked Grebe adult, approximately 30 m northeast of the nest mound (abandoned egg gone). The three Red-necked Grebe chicks along with the Western Grebe chick were dumped into the water when the adult reared up, flapping its wings. The mate arrived with a fish, but it appeared too big for any of the young to swallow and was dropped into the water and not pursued. All four chicks returned to their brooding place on the adult's back.

It was 48 hours before I made another visit on 27 July, and although I easily located the Western Grebe chick as it was actively climbing on and off the adult Red-necked Grebe, I could see no evidence of the three Red-necked Grebe chicks. What happened? My visit on 29 July further confirmed that there were no surviving Red-necked Grebe chicks as the adults were devoting all of their time to feeding and brooding the Western Grebe chick. Did the three Red-necked Grebe chicks succumb to exposure or to

predation, such as by the introduced largemouth bass (*Micropterus salmoides*), or to aggressive behaviour by the parents, or from competition for food with the larger more dominant Western Grebe chick?

In the late afternoon of 30 July another major storm hit Duck Lake with 72 km/hr winds (Environment Canada 2006) destroying all remaining Western and Red-necked Grebe nests. Although I scanned the lake with a spotting scope until the third week in August I could not relocate the family of Red-necked Grebes with their Western Grebe chick and so it is not known if the chick developed to maturity.

Although eggs of Western Grebe, Horned Grebe (*Podiceps auritus*), Pied-billed Grebe (*Podilymbus podiceps*) and Redhead (*Aythya americana*) have been found in Red-necked Grebe nests, success of parasitic eggs is unknown (Stout and Nuechterlein 1999). My observations over the past 12 years, and these eight incidences, lead me to conclude that however infrequent, Western Grebes that breed on Duck Lake are parasitizing nests of Red-necked Grebes. Red-necked Grebes are able to successfully rear the chicks of Western Grebe, but appear fail in raising any of their own offspring in conjunction with the foster chick.

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