

## Aquatic Invertebrates in Särkkäniemi

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Aquatic invertebrates play a vital role in ecosystems. Some invertebrates, such as non-biting midges larvae (Chironomidae), feed on algae and thus control algae abundance. Bigger invertebrates, such as diving beetles (Dytiscidae) and dragonfly larvae (Odonata), are predators of other invertebrates. These invertebrates are important food for waterbirds, such as Tufted Ducks (*Aythya fuligula*), and amphibians, such as Smooth Newts (*Lissotriton vulgaris*).



**Figure 1.** Ponds in Särkkäniemi. The pond ③ dried up in May 2018.

The wetlands in Särkkäniemi (Figure 1) were formed from former lagoons. The wetlands ① and ③ are seasonal, while the pond ② seems to be deeper and permanent. Due to the exceptional drought, the pond ③ dried up in May 2018. Only the road ponds ① and ② were able to be studied (Figure 2). Ten activity traps were set horizontally in the water for 48 hours to collect aquatic invertebrates. Due to the size difference, three traps were set in the pond ①, and seven traps were set in the pond ②. The aquatic invertebrates were trapped in June, July, and August 2018.



**Figure 2.** the road pond ① was wet in June (A) and dried in August (C); the road pond ② in May (B) and in August (D).

During the summer 2018, 34 species from 3 orders (Coleoptera, Odonata, and Hemiptera; Table 1 and 2) were found. The aquatic Coleoptera were diving beetles (Dytiscidae, 26 species from 12 genera), crawling water beetles (Halplidae, 1 species), and burrowing water beetles (Noteridae, 1 species). Four dragonfly species were found breeding in Särkkäniemi wetlands. They were brown hawkers (*Aeshna grandis*), blue emperors (*Anax imperator*), common darters (*Sympetrum striolatum*), and vagrant darters (*Sympetrum vulgatum*). The two backswimmer species were *Notonecta lutea* and *N. reuteri*. All the 34 species are in the conservation status Least Concern.

Interestingly, only four small-sized diving beetle species (*Hydroporus* spp. and *Hygrotus* spp.) were found in the Särkkäniemi wetlands, which indicates that there may be a small fish population in the ponds, but the aquatic vegetation, especially mosses and sedges, provided good habitats for dytiscids to survive.

The larvae of four dragonfly species were found in both road ponds, and exuviae (cast skins, Figure 3) were found on the emergent plants. These evidences suggested dragonflies bred, completed larval development, and emerged as adults in the Särkkäniemi wetlands. The presence of dragonfly larvae indicates the ponds did not dry to the bottom, as it takes them at least 1-2 years to complete larval development.



**Figure 3.** An exuvia of a brown hawker (*Aeshna grandis*).

The reed bed area should be limited in future management to prevent the Särkkäniemi wetlands from replacing by reeds. Fish traps can be used to check if there are fish and what are the species in the Särkkäniemi wetlands.

**Table 1.** Aquatic beetle species found in Särkkäniemi. “A” represents “adult”, and “L” represents “larvae”.

		PIENI			ISO		
		JUNE	JULY	AUG	JUNE	JULY	AUG
Dytiscidae	<i>Acilius canaliculatus</i>		L	L	A		
	<i>Agabus sturmii</i>		A		A		A
	<i>Agabus serricornis</i>	A	A	A	A	A	A
	<i>Colymbetes paykulli</i>		A	A	A		
	<i>Dytiscus laptoicus</i>			A			
	<i>Dytiscus marginalis</i>			A		A	
	<i>Graphoderus austriacus</i>				A		A
	<i>Graphoderus cinereus</i>		A			A	
	<i>Graphoderus zonatus</i>		A	A			
	<i>Hydaticus aruspex</i>				A		
	<i>Hydaticus seminiger</i>	A	A	A	A	A	A
	<i>Hydroporus angustatus</i>			A			A
	<i>Hydroporus incognitus</i>				A		A
	<i>Hygrotus decoratus</i>	A		A			A
	<i>Hygrotus inaequalis</i>	A	A	A	A	A	A
	<i>Hyphydrus ovatus</i>	L			L		
	<i>Ilybius angustior</i>				A		
	<i>Ilybius ater</i>		A		A	A	A
	<i>Ilybius crassus</i>		A	A			
	<i>Ilybius fuliginosus</i>				A		
<i>Ilybius quadriguttatus</i>	A	A				A	
<i>Ilybius subaeneus</i>				A			
<i>Rhantus grapii</i>		A			A		
<i>Rhantus frontalis</i>		A	A			A	
<i>Rhantus suturalis</i>				A			
<i>Suphrodytes dorsalis</i>	A		A				
Haliplidae	<i>Haliplus heydeni</i>	A		A	A	A	A
Noteridae	<i>Noterus crassicornis</i>						A

**Table 2.** Dragonfly (Odonata) and backswimmer (Notonectidae) species found in Särkkäniemi. “A” represents “adult”, and “L” represents “larvae”.

		PIENI			ISO		
		JUNE	JULY	AUG	JUNE	JULY	AUG
Odonata	<i>Aeshna grandis</i>		L		L		L
	<i>Anax imperator</i>		L				
	<i>Sympetrum striolatum</i>					L	
	<i>Sympetrum vulgatum</i>					L	
Notonectidae	<i>Notonecta lutea</i>						A
	<i>Notonecta reuteri</i>			A		A	