REQUEST TO DREDGE IN THE SYDENHAM RIVER, ONTARIO WITH POTENTIAL IMPACT FOR ENDANGERED MUSSEL SPECIES – REVIEW OF SEDIMENT SURVEY RESULTS

Context

Fish Habitat- Ontario Great Lakes Area, has received a request for authorization of a project which involves a dredging activity in the Sydenham River near Wallaceberg. The proponent has requested the authorization to dredge to allow barge access to docking facilities. The area has been subject to siltation that impedes movement of the barges.

Science and Habitat Management have developed a mapping tool for Southern Ontario which identifies waterbodies where there is potential for endangered mussels to occur based on records of known occurrence and habitat characteristics. The Sydenham River near Wallaceberg has been identified as such a waterbody. There is a potential for the following species of mussels to occur in this location: Round Hickorynut (*Obovaria subrotunda*), Kidneyshell (*Ptychobranchus fasciolaris*), Northern Riffleshell (*Epioblasma torulosa rangiana*), Snuffbox (*Epioblasma triquetra*), Round Pigtoe (*Pleurobema sintoxia*), Rayed Bean (*Villosa fabalis*), Mudpuppy Mussel (*Simpsonaias ambigua*) and the Wavyrayed Lampmussel (*Lampsilis fasciola*). The Round Hickorynut is of particular concern, as there are only two known Canadian populations, one of which is found in the lower Sydenham River. All species are listed as Endangered under the Species at Risk Act (SARA). One additional species, Mapleleaf (*Quadrula quadrula*), has also been identified as potentially occurring within this area of the Sydenham River. The Mapleleaf has been assessed by the Committee on the Status of Endangered Wildlife in Canada as Threatened and is currently being considered for listing under SARA.

SARA makes it an offence in sections 32 and 33 to kill, harm, harass, capture or take an individual of a listed species that is extirpated, endangered or threatened. Recovery strategies have been developed for each of the endangered mussel species.

In the Science Response provided earlier on this project (DFO 2007), a survey of the substrate in the area where dredging would occur using sediment cores was recommended to provide data needed to determine if the area had suitable conditions for mussel survival. Additional information is now available regarding sediment composition at the site (Gartner Lee 2007) and Fish Habitat is asking Science for advice on how best to proceed with the review of the project with the new sediment survey information. The assessment should include recommendations for measures to avoid or reduce adverse effects if this project proceeds. The project plan requires Science review to ensure that it respects recovery strategies and does not adversely impact any endangered species. SARA prohibitions still apply and SARA permits may be required if the project proceeds.

Analysis and responses

On January 18-19 2007, 34 Ekman dredge samples were collected from the area of the proposed project (Gartner Lee 2007). The total area of river bottom sampled in this manner was approximately $1m^2$ of the $1365m^2$ project area. Despite the inappropriateness of this sampling gear for detecting mussels and the timing of the sampling (mussels will be not be at the surface in January), a single mussel was detected during this activity. This species (Pink Heelsplitter, *Potamilus alatus*) is not one of the listed species identified above but is a species with similar sediment preferences to the Round Hickorynut and Mapleleaf. Metcalfe-Smith *et al*. (2005) identify the following sediment preferences:

> Pink Heelsplitter: Mixed mud, sand and gravel especially quiet backwaters.
> Round Hickorynut: Sand, gravel and some clay in steady to moderate flows but tolerates turbid conditions.
> Mapleleaf: Soft or coarse substrates in slow moving currents.

Sixty-five percent of the sites sampled by Gartner-Lee (2007) contain a sediment composition equal to or better (contribution by particles < 53µm equal to or smaller) than the sample which yielded the live specimen. These locations must be considered to have the potential to contain mussels.

The sampling undertaken by Gartner-Lee (2007) was used to estimate mussel density over the project area. Base on one mussel from 34 Ekman samples (total area sampled ~ 1 m^2), approximately 1365 animals would be expected to be found in the area where dredging was proposed. Given the inappropriateness of this sampler for detecting mussels and the timing of the sampling this estimate must be considered to be a minimum value. This number represents a significant sized mussel bed and, because of the sediment preferences identified above, there is the potential for the bed to contain listed species.

It is therefore recommended that, if the dredging project is to go ahead, the mussel relocation recommended in (DFO 2007) should be undertaken following the methods outlined in the protocol for the detection and relocation of freshwater mussels currently being developed by Fish Habitat.

Conclusions

Assessment of requests for habitat disturbance have to be reviewed on a case-by-case basis. Conditions present at sites where disturbance is proposed vary and the potential to harm SARA species differs depending on the species in question and the activity being proposed. Based on the mapping tool developed by Science and Habitat Management, the area where proposed dredging is to occur has the potential to negatively impact endangered mussel species. Additional information, now available regarding sediment composition at the site, indicates that the locations surveyed must be considered to have the potential to contain mussels. Based on the results of the sediment sampling report and the sediment preferences of a threatened (currently undergoing legal listing) and an endangered (currently on SARA schedule 1) mussel species which occur in this river, there is the potential for the location to contain mussel species at risk. For this proposal, to dredge in the Sydenham River near Wallaceberg, a course of action has been outlined which involves the proponent removing all mussels from the project site and relocating them to an area not impacted by the project to ensure that the mussels are

not negatively impacted. This advice is consistent with the intent of the Allowable Harm Assessment (in prep.) for the species concerned.

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Sources of information

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