

Species Listing PROPOSAL Form:
Listing Endangered, Threatened, and Special Concern Species in Massachusetts

Scientific name: *Polycelis remota*

Current Listed Status (if any): E

Common name: Sunderland Spring Planarian

Proposed Action: Add the species, with the status of: _____ Remove the species Change the species' status to: SC Change the scientific name to: *Seidlia remota*

Change the common name to: _____

(Please justify proposed name change.)

Proponent's Name and Address:

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Phone Number: 508 389-6325, 6389

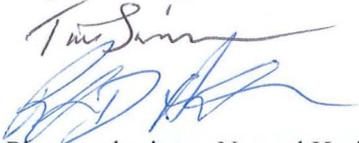
Fax:

E-mail: tim.simmons@state.ma.us,

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Association, Institution or Business represented by proponent: NHESP

Proponent's Signature:



Date Submitted:

6/2/14
6/2/14

Please submit to: Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife, 100 Hartwell St. Suite 230, West Boylston, MA 01583

Justification

Justify the proposed change in legal status of the species by addressing each of the criteria below, as listed in the Massachusetts Endangered Species Act (MGL c. 131A) and its implementing regulations (321 CMR 10.00), and provide literature citations or other documentation wherever possible. Expand onto additional pages as needed but make sure you address all of the questions below. The burden of proof is on the proponent for a listing, delisting, or status change.

(1) **Taxonomic status.** Is the species a valid taxonomic entity? Please cite scientific literature.

Taxonomic status is uncertain. Originally described as *Polycelis remota* in Smith (1988), but redescribed by Kawakatsu and Mitchell (1998) as *Seidlia remota*, citing original author's misinterpretation of genital anatomy distinguishing these genera. *Seidlia* was originally considered a subgenus of *Polycelis* (Kenk 1973), but proposed as its own genus by Kawakatsu and Mitchell in 1995 (Kawakatsu & Mitchell 1995). Other species in the sub-genera *Polycelis* (*Seidlia*) have also been proposed for elevation in the genus *Seidlia* (Kawakatsu & Timoshkin 1998). The only species checklist easily found for the Turbellaria places distinction between the genera and lists *remota* in the genus *Seidlia*, including 11 other species (Artois et al. 2013).

More recent work has shed doubt on the taxonomic identity of *Seidlia remota* at the species level. Sluys et al. (2009) discuss that the only difference between *S. remota* and a Palearctic congener – *S. schmidtii* – is the degree of development in a muscular intestinal anastomosis, which could be related to environmental factors rather than phylogeny. As such, the authors recommended *Seidlia remota* should be considered a junior synonym of *Seidlia schmidtii* (Sluys et al. 2009, Kawakatsu & Mitchell, 2011).

We recommend the renaming of *Polycelis remota* to *Seidlia remota* following Kawakatsu and Mitchell (1998) and to be in taxonomic concordance with available and current checklists (Artois et al. 2013). Further, we also recommend the down listing to Special Concern rank (SC) from state Endangered given that: a thorough assessment of regional habitats has not been conducted, available and occupied habitat is likely larger than the known distribution suggests, and because the species was originally recommended for listing as Special Concern by the describer in 1992 (Smith 1992) as a precaution because relatively little was known about the species.

Given the great deal of taxonomic uncertainty of the species, and a lack of information on its biology and distribution, we feel that a status of Special Concern is more appropriate than listing as Endangered. Such a downlisting would still provide regulatory protection under MESA (if extant populations were located), while preserving the integrity of Endangered and Threatened status for species that have documented threats, trends of declining populations or habitats, and/or rarity established through systematic sampling of available habitat.

- (2) **Recentness of records.** How recently has the species been conclusively documented within Massachusetts?

13 January 1988 was the date of last observation.

- (3) **Native species status.** Is the species indigenous to Massachusetts?

Yes. Smith 1988. “Artificial transfers of freshwater triclad flatworms are generally considered rare” (Reynoldson 1966 as cited by Smith 1988).

- (4) **Habitat in Massachusetts.** Is a population of the species supported by habitat within the state of Massachusetts?

Type locality, and only documented occurrence is on MA Division of Fisheries and Wildlife Fish Hatchery property, found from the spring fed pond and raceways. The extent of sampling outside of this spring is unknown, but similar habitat is likely available within the vicinity.

- (5) **Federal Endangered Species Act status.** Is the species listed under the federal Endangered Species Act?

No Federal Status.

(6) Rarity and geographic distribution.

(a) Does the species have a small number of occurrences (populations) and/or small size of populations in the state? Are there potentially undocumented occurrences in the state, and if so, is it possible to estimate the potential number of undocumented occurrences?

One known site, a cool spring with year round water temperature of 8.5-9.0 C (47.3 – 48.2 F). Most groundwater fed springs are a little warmer but there are probably more within this formation (Figure 1).

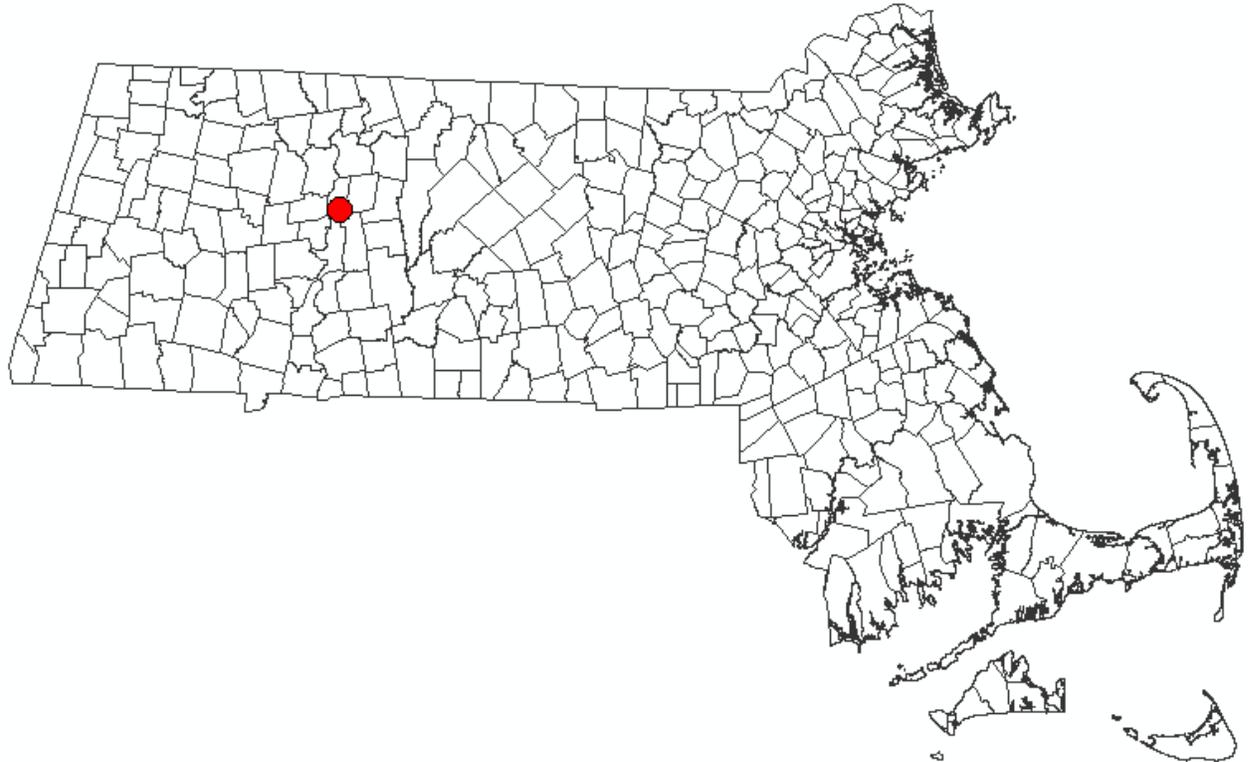


Figure 1: Distribution of *Seidlia remota* in Massachusetts

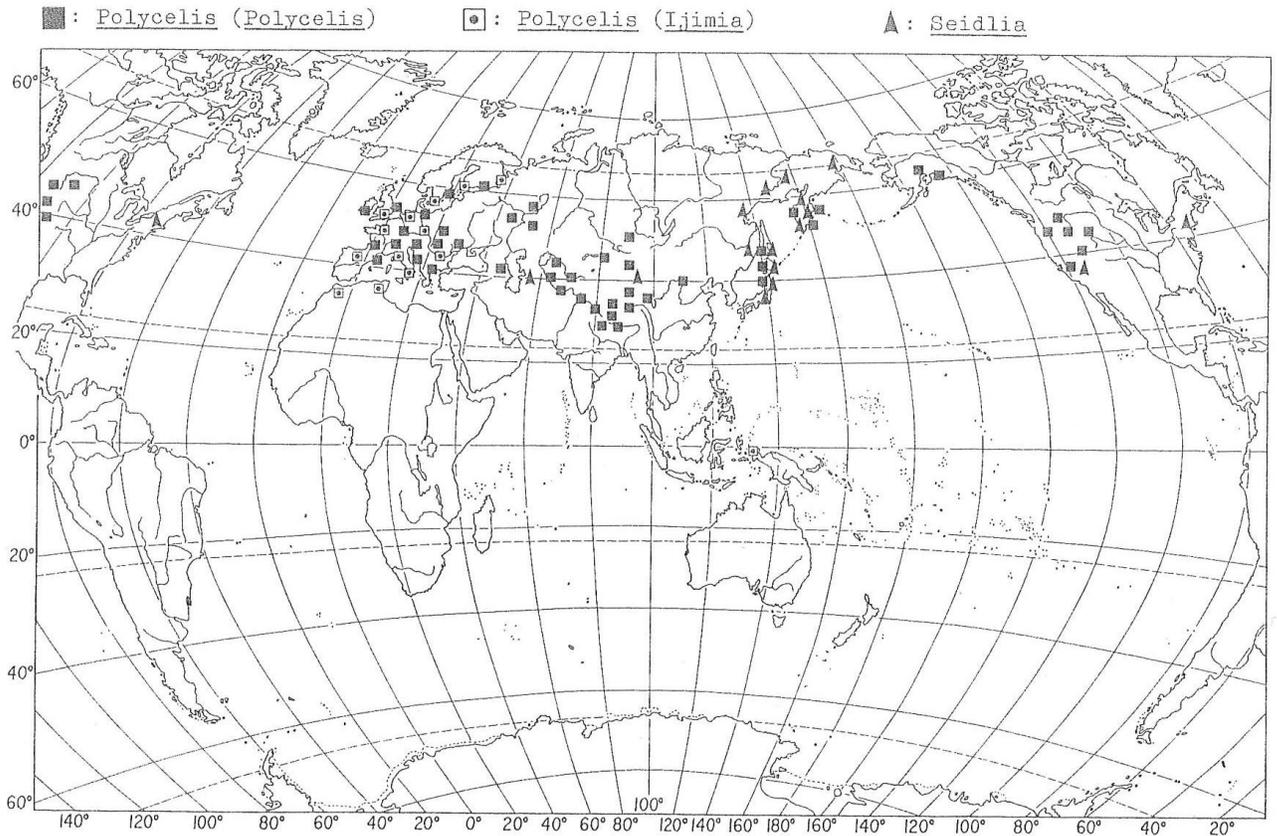


Fig. 7. Worldwide distribution of the genera *Polycelis* EHRENBERG, 1831 (subgenera *Polycelis* EHRENBERG, 1831, and *Ijimia* BERGENDAL, 1890) and *Seidlia* ZABUSOV, 1911. (After KAWAKATSU, OKI, TAMURA, TAKAI, YAMAMOTO, NISHINO, TIMOSHKIN, KUZNEDELOV & SLUYS, 1996 ; modified.)

Figure 2: Worldwide distribution of genera *Polycelis* and *Seidlia*, from Kawakatsu & Mitchell (1998).

(b) What is the extent of the species' entire geographic range, and where within this range are Massachusetts populations (center or edge of range, or peripherally isolated)? Is the species a state or regional endemic?

The species appears to be a Sunderland endemic. Congeners in *Polycelis* and *Seidlia* are only reported from western North America, Asia, and Europe (Smith 1992, Kawakatsu & Mitchell 1998, Figure 2). No other *Seidlia* species is known from North America (Kawakatsu & Mitchell 1998).

(7) Trends.

(c) Is the species decreasing (or increasing) in state distribution, number of occurrences, and/or population size? What is the reproductive status of populations? Is reproductive capacity naturally low? Has any long-term trend in these factors been documented?

No trends have been documented or assessed.

(8) Threats and vulnerability.

(d) What factors are driving a decreasing trend, or threatening reproductive status in the state? Please identify and describe any of the following threats, if present: habitat loss or degradation; predators, parasites, or competitors; species-targeted taking of individual organisms or disruption of breeding activity.

Possible changes in water temperature, and water quality associated with development or gravel excavation operations were cited as potential threats in the listing proposal (Smith 1992). Currently the site is protected within the state owned fish hatchery.

(e) Does the species have highly specialized habitat, resource needs, or other ecological requirements? Is dispersal ability poor?

The population was observed in the spring and stream and concrete raceways over a 90 meter distance. As water temperature rose two more common species were documented (Smith 1992). Similar stream systems and spring fed ponds occur within the immediate vicinity, but sampling of which is unknown (Figure 3).

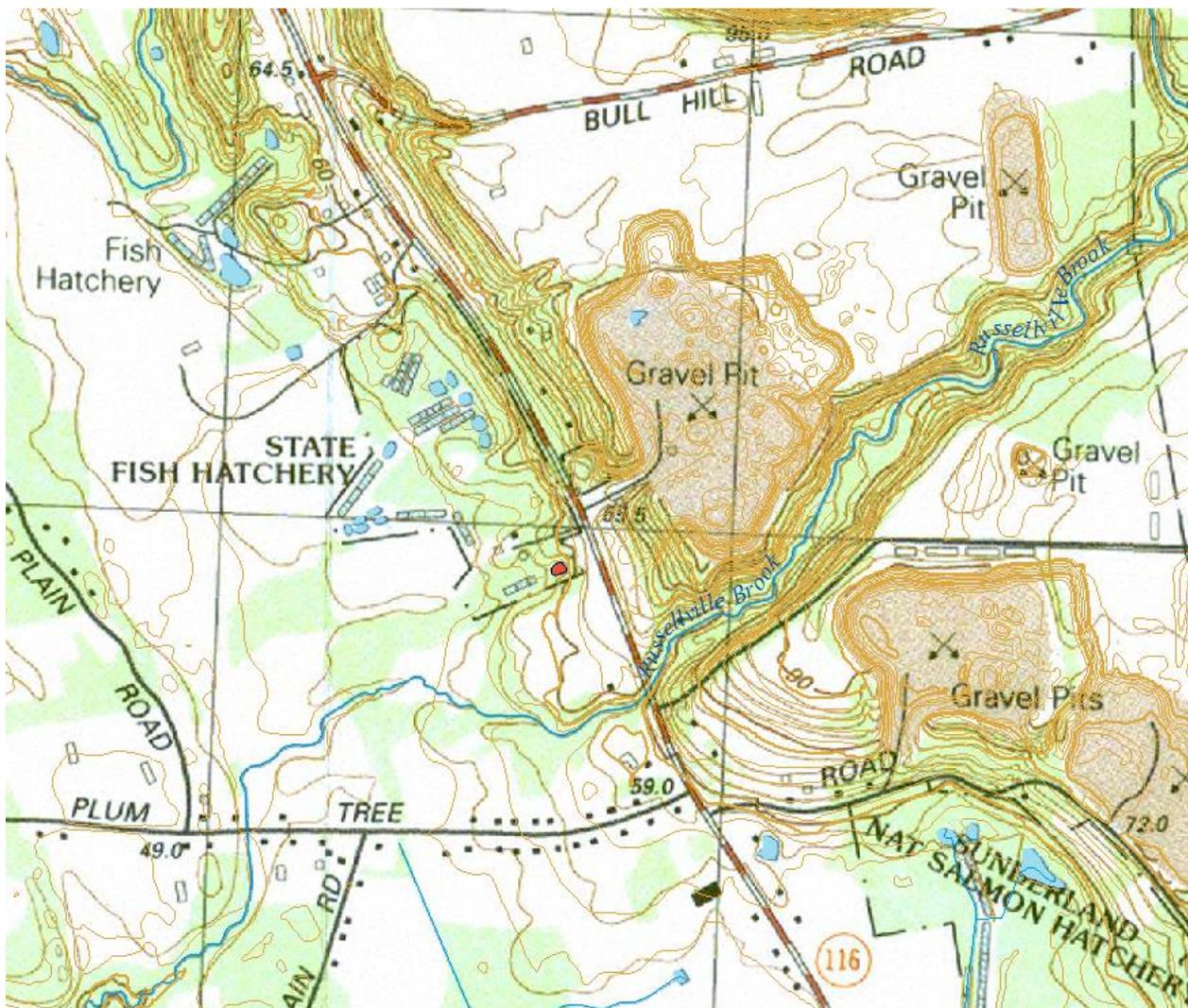


Figure 3: Type locality of *Seidlia remota* and surrounding potential habitats. Approximate location of samples shown in red.

Conservation goals.

What specific conservation goals should be met in order to change the conservation status or to remove the species from the state list? Please address goals for any or all of the following:

- (a) State distribution, number of occurrences (populations), population levels, and/or reproductive rates

Documentation from 3 or more springs would be grounds to delist as it would indicate the likelihood of discovering additional populations.

- (b) Amount of protected habitat and/or number of protected occurrences

100 % of known occurrences (1) protected.

- (c) Management of protected habitat and/or occurrences

Continued water quality monitoring and source water protection associated with state hatchery operations.

Literature cited, additional documentation, and comments.

Artois, T. Schockaert, E. and S. Tyler. 2013. *World checklist of freshwater Turbellaria*. Freshwater Animal Diversity Assessment Project (FADA). The Belgian Biodiversity Platform. World wide web electronic publication. Available online at <http://fada.biodiversity.be/group/show/3>

Kawakatsu, M. and L. Mitchell. 2011. The Late Dr. Robert Wetsel Mitchell (1933-2010): Over 32-year Study of Planarians. Kawakatsu's Web Library on Planarians: December 1, 2011. World wide web electronic publication. Available online at <http://www.riverwin.jp/pl/mitchell/Late%20Dr%20Mitchell%20KWLP%202011.pdf>

Kawakatsu, M. and R.W. Mitchell. 1995. New taxonomic data on an American triclad, *Seidlia remota* (Smith, 1988), with a proposal that generic recognition be extended to the subgenus *Seidlia*. *Zool. Sci. Tokyo*, 12-Suppl. : 32.

Kawakatsu, M. and R.W. Mitchell. 1998. Redescription of a North American Freshwater planarian, *Seidlia remota* (Smith, 1988), with taxonomic notes on *Seidlia* and *Polycelis* species from the Far East and Central Asia (Turbellaria, Seriata, Tricladida, Paludicola). *Bulletin of Fuji Women's College* (36) Ser. II:95-110.

Kawakatsu, M. and Timoshkin. 1998. The geographical distribution of *Polycelis (Polycelis) sapporo* and *Seidlia schmidtii* in the Far East. *Hydrobiologia* 383:307-313.

Kenk, R. 1973. Freshwater Triclad (Turbellaria) of North America, V: The Genus *Polycelis*. *Smithsonian Contributions to Zoology*, Number 135.

Reynoldson, T.B. 1966. The distribution and abundance of lake dwelling triclad – towards a hypothesis. *Adv. Ecol. Res.* 3: 1 -71.

Sluys, R., I. Smolders, M. Kawakatsu, T. W. Pietesch and Ryoichi B. Kuranishi. 2009. Freshwater Planarians (Platyhelminthes: Tricladida: Planariidae) from the Kuril Islands and Kamchatka. *Species Diversity* 14(4): 307-322. 15 pp.

Smith, D.G. 1988. A new, disjunct species of triclad flatworm (Turbellaria, Tricladida) from a spring in southern New England. *Biological Bulletin* 175(2):246-252.

Smith, D.G. 1991. Keys to the Freshwater Macroinvertebrates of Massachusetts. D.G. Smith, Amherst, Massachusetts. 236 pp.

Smith, D.G. 1992. Selected freshwater macroinvertebrates proposed for special concern status in Massachusetts (Porifera, Platyhelminthes, Ectoprocta and Mollusca)- Part III. Department of Zoology, University of Massachusetts, Amherst, MA. 12 pp.