Northwestern salamander

*Ambystoma gracile*

**Review Status:** Peer-reviewed

**Version Date:** 23 April 2018

**Class:** Amphibia

**Order:** Caudata

**Ambystoma gracile**

**G Rank:** G5

**S Rank:** S3

**Peer-reviewed**

**Status**

- variables measure the trend in a taxon’s population status or distribution. Higher status scores denote taxa with known declining trends. Status scores range from -20 (increasing) to 20 (decreasing).

<table>
<thead>
<tr>
<th>Category</th>
<th>Range</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>-20 to 20</td>
<td>0</td>
</tr>
<tr>
<td>Biological</td>
<td>-50 to 50</td>
<td>8</td>
</tr>
<tr>
<td>Action</td>
<td>-40 to 40</td>
<td>40</td>
</tr>
</tbody>
</table>

**Score**

unknown status and high biological vulnerability and action need

<table>
<thead>
<tr>
<th>Conservation category:</th>
<th>Score</th>
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</thead>
<tbody>
<tr>
<td>IV. Orange</td>
<td></td>
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</table>

**Final Rank**

- variables measure aspects of a taxon’s distribution, abundance and life history. Higher biological scores suggest greater vulnerability to extirpation. Biological scores range from -50 (least vulnerable) to 50 (most vulnerable).

**Score**

**Population Trend in Alaska (-10 to 10)**

Unknown.

0

**Distribution Trend in Alaska (-10 to 10)**

Unknown.

0

**Status Total:** 0

**Biological**

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
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</thead>
<tbody>
<tr>
<td>Population Size in Alaska (-10 to 10)</td>
<td>6</td>
</tr>
<tr>
<td>Range Size in Alaska (-10 to 10)</td>
<td>4</td>
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</table>

Unknown, but suspected small. This species is rarely detected during amphibian surveys and few occurrences have been reported (e.g. Waters 1992; Anderson 2004; Ream 2016).

Restricted to Southeast Alaska. Little is known about its distribution in Alaska. It has been collected on Mary Island and Chichagof Island (MacDonald 2010), and has been reported as far north as Glacier Bay (Anderson 2004; MacDonald 2010). Additional surveys are required to determine range limits and verify its presence on the Stikine River (Waters 1992; Ream 2016). Estimated range size is 9,442 sq. km, based on range map from ACCS (2017a; note that range map does not include record from Glacier Bay).
**Population Concentration in Alaska (-10 to 10)**

Does not concentrate, but there may be fewer than 250 sites given the scarcity of occurrence records in the state. We tentatively rank this question as 0.5 * B + 0.5 * C until more information is available.

**Reproductive Potential in Alaska**

**Age of First Reproduction (-5 to 5)**

Females typically attain sexual maturity at 2-3 years (Snyder 1956; Eagleson 1976).

**Number of Young (-5 to 5)**

Adult females lay more than 100 eggs annually (Knudsen 1960; Lindsey 1966); neotenic females are also capable of breeding but lay fewer eggs (Snyder 1956; Knudsen 1960). Although studies are limited, they suggest that survival rates to larvae or juvenile life stages are less than 10% (Shoop 1974; Petranka 1984; Petranka and Sih 1986). To account for these very low survival rates, we rank this question as C- 3-9 offspring/year.

**Ecological Specialization in Alaska**

**Dietary (-5 to 5)**

Little information available. Feeds on terrestrial and aquatic invertebrates including dipteran larvae, small crustaceans, and mollusks (Neish 1970; Licht 1975a). Because invertebrates are ephemeral and potentially unpredictable food sources, we rank this question as B- Moderately adaptable.

**Habitat (-5 to 5)**

Requires freshwater to complete its life cycle. Eggs are deposited in lakes and ponds (MacDonald 2010). Larvae are aquatic, while adults live underground or in moist habitats near freshwater (Hoffman et al. 2003; Anderson 2004; MacDonald 2010). Outside Alaska, habitat types include moist meadows, wetlands, and forests from sea level to >1,900 meters (Snyder 1956; Hoffman et al. 2003).

**Knowledge of Distribution and Habitat in Alaska (-10 to 10)**

Little is known about this species' distribution and habitat associations in Alaska. Few occurrences have been documented (ARCTOS 2016; Ream 2016). Amphibian surveys have been conducted on the mainland and islands of Southeast Alaska including Juneau, Glacier Bay, the Stikine River, and Prince of Wales and Admiralty Islands (Waters 1992; Carstensen et al. 2003; Anderson 2004; Pyare 2007; Gotthardt et al. 2015; Ream 2016), but only a few detected Northwestern Salamanders (Waters 1992; Anderson 2004).

**Management Plans and Regulations in Alaska (-10 to 10)**

Not managed or protected in the state of Alaska. A permit is required to collect specimens for scientific or educational purposes (ADF&G 2004).

**Knowledge of Population Trends in Alaska (-10 to 10)**

Not currently monitored.

**Knowledge of Factors Limiting Populations in Alaska (-10 to 10)**

Very little is known about the ecology of this species in Alaska. Potential threats include pathogens,
climate-related habitat loss e.g. wetland drying, and introduced species (MacDonald 2010). Several studies outside of Alaska have shown that predation by introduced trout can severely depress amphibian populations (e.g. Funk and Dunlap 1999; Welsh et al. 2006; Larson et al. 2017).

**Supplemental Information** - variables do not receive numerical scores. Instead, they are used to sort taxa to answer specific biological or management questions.

<table>
<thead>
<tr>
<th>Harvest:</th>
<th>None or Prohibited</th>
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<tbody>
<tr>
<td>Seasonal Occurrence:</td>
<td>Year-round</td>
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<tr>
<td>Taxonomic Significance:</td>
<td>Monotypic species</td>
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<tr>
<td>% Global Range in Alaska:</td>
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<tr>
<td>% Global Population in Alaska:</td>
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</tr>
<tr>
<td>Peripheral:</td>
<td>Yes</td>
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</table>

**References**


Alaska Department of Fish and Game (ADFG). 2004. Policy and requirements for fish resource permits. Juneau, AK, USA.


