



Insects

# Arrow Clubtail

*Stylurus spiniceps*

Priority 2 Species of Greatest Conservation Need (SGCN)

Class: Insects (*Insecta*)

Order: Dragonflies And Damselflies (*Odonata*)

Family: Clubtails (*Gomphidae*)

## General comments:

The Arrow Clubtail is a large, multi-colored dragonfly with bright green eyes in the Clubtails family (Gomphidae). This species inhabits medium to large rivers with riffles, often with sandy substrates, and has been documented in just four southwestern rivers. It is listed as state Special Concern and considered at risk because of its limited distribution and number of occurrences, and the vulnerability of its habitat to degradation from intensive land use practices and pollution.

## Species Conservation Range Maps:

Town Map: [Stylurus spiniceps\\_Towns.pdf](#)

Subwatershed Map: [Stylurus spiniceps\\_HUC12.pdf](#)

## SGCN Priority Ranking - Designation Criteria:

### State Special Concern:

Arrow Clubtail is listed as a species of Special Concern in Maine.

### Professional Discretion:

Current criteria ranked *Stylurus spiniceps* as SGCN priority 3, however, species should be SGCN priority 2 based on professional discretion.

**Justification:** very rare though undersurveyed

## Habitat Associations:

**Formation:** Freshwater Aquatic

**Macrogroup:** Lotic

	<b>Habitat System:</b> Lotic Macrogroup - Unknown habitat system <i>primary; medium to large rivers with riffles, often with sandy substrate</i>
★ Primary Habitat	<b>Habitat System:</b> Non-cold Large Rivers <i>medium to large rivers with riffles, often with sandy substrate</i>
★ Primary Habitat	<b>Habitat System:</b> Transitional Small and Medium Rivers <i>medium to large rivers with riffles, often with sandy substrate</i>
★ Primary Habitat	<b>Habitat System:</b> Unknown Thermal Regime Small and Medium Rivers <i>medium to large rivers with riffles, often with sandy substrate</i>

## Threats



Arrow Clubtail *Stylurus spiniceps*

Priority 2 SGCN

Threat Priority Level based on Severity and Actionability		Moderate Severity	High Severity
	Highly Actionable	Medium-High	High
	Moderately Actionable	Medium	Medium-High
	Actionable with Difficulty	Low	Low

IUCN Level 1 Threat    Other Options

IUCN Level 2 Threat: Resource Needs

**Severity:** High Severity      **Actionability:** Moderately Actionable

**Notes:** MDIFW lacks funding and staff to implement conservation actions for SGCN invertebrates (e.g., surveys and monitoring, research, habitat protection, outreach and education)

IUCN Level 1 Threat    Agriculture and Aquaculture

IUCN Level 2 Threat: Annual and Perennial Non-timber crops

**Severity:** Moderate Severity      **Actionability:** Moderately Actionable

**Notes:** in riparian habitat where land use and loss of intact forest canopy can degrade aquatic habitat integrity and water quality

IUCN Level 1 Threat    Biological Resource Use

IUCN Level 2 Threat: Logging and Wood Harvesting

**Severity:** Moderate Severity      **Actionability:** Moderately Actionable

**Notes:** in riparian buffer where loss of intact forest canopy can degrade aquatic habitat integrity and water quality

IUCN Level 1 Threat    Other Options

IUCN Level 2 Threat: Education & Outreach

**Severity:** Moderate Severity      **Actionability:** Moderately Actionable

**Notes:** some threats and challenges can be minimized through enhanced public outreach and advocacy (e.g., pesticide use, habitat management, improved stream crossings, awareness and appreciation)



Arrow Clubtail *Stylurus spiniceps*

Priority 2 SGCN

**IUCN Level 1 Threat    Other Options**

**IUCN Level 2 Threat: Lack of knowledge**

<b>Severity:</b> Moderate Severity	<b>Actionability:</b> Moderately Actionable
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**Notes:**    lack of comprehensive knowledge about distribution, status, habitat, life history

**IUCN Level 2 Threat: Other Threat**

<b>Severity:</b> Moderate Severity	<b>Actionability:</b> Moderately Actionable
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**Notes:**    pesticides (e.g., homeowner, agricultural, forest and water quality management applications of insecticides and herbicides; herbicide spraying along roadsides and shorelines) can directly and indirectly affect nymphs and adults (e.g., decrease aquatic vegetation for egg-laying and emergence, decrease insect prey, direct and indirect toxicity)

**IUCN Level 1 Threat    Pollution**

**IUCN Level 2 Threat: Agricultural and Forestry Effluents**

<b>Severity:</b> Moderate Severity	<b>Actionability:</b> Moderately Actionable
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**Notes:**    in riparian buffer or aquatic system where run off/application of pesticides, fertilizers, and other chemicals can degrade water quality and impact nymphs

**IUCN Level 2 Threat: Domestic and Urban Waste Water**

<b>Severity:</b> Moderate Severity	<b>Actionability:</b> Moderately Actionable
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**Notes:**    impacts to water quality from point and non-point sources

**IUCN Level 1 Threat    Residential and Commercial Development**

**IUCN Level 2 Threat: Commercial and Industrial Areas**

<b>Severity:</b> Moderate Severity	<b>Actionability:</b> Moderately Actionable
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**Notes:**    in riparian habitat where land use and loss of intact forest canopy can degrade aquatic habitat integrity and water quality



## Arrow Clubtail *Stylurus spiniceps*

### Priority 2 SGCN

#### IUCN Level 1 Threat Residential and Commercial Development

##### IUCN Level 2 Threat: Housing and Urban Areas

<b>Severity:</b> Moderate Severity	<b>Actionability:</b> Moderately Actionable
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**Notes:** in riparian habitat where land use and loss of intact forest canopy can degrade aquatic habitat integrity and water quality

#### IUCN Level 1 Threat Transportation and Service Corridors

##### IUCN Level 2 Threat: Roads and Railroads

<b>Severity:</b> Moderate Severity	<b>Actionability:</b> Moderately Actionable
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**Notes:** in riparian buffer where loss of intact forest canopy can degrade aquatic habitat integrity and water quality (e.g., run-off, road salt); in stream channel where construction, maintenance, and poorly designed stream crossings can cause erosion of stream banks, sedimentation, water quality degradation, and direct mortality

#### Species Level Conservation Actions:

None. Only species specific conservation actions that address high (red) or medium-high (orange) priority threats are summarized here.

#### Conservation Actions Associated with the Riverine Odonates Guild:

Conservation Action	Category	Biological Priority	Type
Analyze results of the Maine Dragonfly & Damselfly Survey, research and incorporate external Maine records (historical and modern), and produce a summary document and conservation assessment.	Research	high	on-going

##### Threat(s) Addressed By This Conservation Action

- Lack of knowledge

Conservation Action	Category	Biological Priority	Type
Increase MDIFW staff capacity for survey, research, and conservation of SGCN invertebrates.	Policy	critical	new

##### Threat(s) Addressed By This Conservation Action

- Education & Outreach
- Lack of knowledge
- Resource Needs



## Arrow Clubtail *Stylurus spiniceps*

### Priority 2 SGCN

Conservation Action	Category	Biological Priority	Type
Develop/distribute outreach materials to raise public awareness and appreciation of freshwater aquatic insect ecology, threats and conservation needs.	Public Outreach	moderate	on-going

#### Threat(s) Addressed By This Conservation Action

- Education & Outreach

Conservation Action	Category	Biological Priority	Type
Conduct comprehensive statewide surveys to inform status, distribution, threats, and habitat use.	Survey and Monitoring	high	on-going

#### Threat(s) Addressed By This Conservation Action

- Lack of knowledge

Conservation Action	Category	Biological Priority	Type
Develop/distribute Best Management Practices for landowners, land managers and conservation partners to avoid and minimize impacts of intensive land use activities (e.g., forestry, stream crossings, agriculture, development, hydro facilities).	Habitat Management	high	on-going

#### Threat(s) Addressed By This Conservation Action

- Roads and Railroads
- Housing and Urban Areas
- Commercial and Industrial Areas
- Domestic and Urban Waste Water
- Agricultural and Forestry Effluents
- Education & Outreach
- Logging and Wood Harvesting
- Annual and Perennial Non-timber crops

Conservation Action	Category	Biological Priority	Type
Develop/distribute guidelines and outreach materials to inform conservation partners, land use managers, and the general public about the impacts of pesticides on native insects and to promote the alternative use of Integrated Pest Management practices.	Public Outreach	moderate	on-going

#### Threat(s) Addressed By This Conservation Action

- Education & Outreach
- Other Threat



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Conservation Action	Category	Biological Priority	Type
Conduct a statewide dragonfly/damselfly atlasing project.	Survey and Monitoring	high	completed

#### Threat(s) Addressed By This Conservation Action

- Lack of knowledge
- Education & Outreach

Conservation Action	Category	Biological Priority	Type
Update NatureServe S-ranks for all Maine Odonata based on results of the Maine Damselfly and Dragonfly Survey.	Research	high	completed

#### Threat(s) Addressed By This Conservation Action

- Lack of knowledge

### Broad Taxonomic Group Conservation Actions:

Additional relevant conservation actions for this species are assigned within broader taxonomic groups in Maine's Wildlife Action Plan: Element 4.

### Habitat Based Conservation Actions:

Additional conservation actions that may benefit habitat(s) associated with this species can be found in Maine's Wildlife Action Plan: Element 4. Click on the Habitat Grouping of interest to launch a habitat based report summarizing relevant conservation actions and associated SGCN.

*The Wildlife Action Plan was developed through a lengthy participatory process with state agencies, targeted conservation partners, and the general public. The Plan is non-regulatory. The species, threats, and voluntary conservation actions identified in the Plan complement, but do not replace, existing work*