

Waterbirds – Introduction

For development of this plan, “waterbirds” does not include waterfowl or shorebirds, as both of those groups are dealt with separately. Nor does it include Osprey (dealt with by the Raptors group) or Belted Kingfisher or American Dipper (dealt with by the Landbird group). Aside from loons and grebes, the only other waterbird we therefore felt fell within our purview was Great Blue Heron. This species is continentally abundant and widespread, and without any obvious conservation concern within Alaska, we elected not to dwell on this species. Thus, our Waterbirds group developed templates just for loons and grebes.

Four templates were developed: one for Yellow-billed Loons, one for Red-throated Loons, one for all loons, and one for grebes. The rationale for the 2 species-specific treatments was that good abundance and/or trend information exists for loons, and for 2 species—Yellow-billed and Red-throated Loons—significant conservation concern at a state and national level is warranted. A group was made for all loons because (a) some type of threats to populations are common to all loon species, due to their similar life history, and (b) the other 3 loon species in Alaska are of less immediate conservation concern, but nonetheless, some localized concerns exist and this grouping provided the forum to identify issues. Alaska’s 2 grebe species were grouped into a single template primarily because so little is known about their populations and ecology to usefully develop unique, species-specific templates.

Grebes

<p>A. Species group description</p> <p>Common name(s): Grebes: Red-necked Grebe and Horned Grebe Scientific names: <i>Podiceps grisegena</i> and <i>Podiceps auritus</i></p>
<p>B. Distribution and abundance</p> <p>Range:</p> <p><u>Global range comments (both Red-necked Grebe and Horned Grebe):</u> Breeding range: Circumpolar in sub-Arctic and boreal habitats. Non breeding range: Coastal marine waters of northeast and northwest Pacific, and northeast and western Atlantic; occasionally winters on the Great Lakes in the United States; Horned Grebe winters locally on inland lakes, rivers, and reservoirs, mainly south of latitude 38°N.</p> <p><u>State range comments (both Red-necked Grebe and Horned Grebe):</u> Breeding: South of the Brooks Range; absent from the Aleutian Islands and Southeast Alaska. Nonbreeding: Coastal marine areas from the Aleutian Islands to Southeast Alaska.</p>

Abundance:

Global abundance comments (Red-necked Grebe): Lack of information to indicate; 45,000 + individuals estimated in North America (Stout and Nuechterlein 1999).

State abundance comments (Red-necked Grebe): 12,000 (individuals) (R. Platte, USFWS, personal communication) estimated for Alaska.

Global abundance comments (Horned Grebe): Lack of information to indicate; 200,000+ individuals estimated in North America (Stedman 2000).

State abundance comments (Horned Grebe): Lack of information to indicate.

Trends:

Global trends (Red-necked Grebe): Lack of information to indicate.

State trends (Red-necked Grebe): Aerial survey data collected annually from 1988 to 1998 in the coastal zone of Yukon Delta National Wildlife Refuge suggests that the local breeding population is declining at a rate of 10% a year (R. Platte, USFWS, personal communication). No clear trend for the rest of the state.

Global trends (Horned Grebe): Lack of information to indicate. In North America, breeding range has shown slow, long-term contraction northwestward and NABBS data show significant negative trend continentwide from 1966 to 1996 (Stedman 2000).

State trends (Horned Grebe): Lack of information to indicate.

C. Problems, issues, or concerns for species group

- Little is known about either population in Alaska for all aspects of breeding and nonbreeding populations
- Horned Grebe breeding range has shown slow, long-term contraction northwestward and NABBS data show significant negative trend for North America from 1966 to 1996 (Stedman 2000)
- Unknown molting locations may pose a conservation concern to both species populations because of their tendency to aggregate in one spot
- Commercial and subsistence gillnets are potentially important sources of mortality for grebes
- Position at the top of the food chain makes grebes susceptible to biomagnification of contaminants
- Lake dynamics and changing phenology associated with global climate change may have effects on populations
- Invasive and introduced fish, e.g. northern pike, can alter the composition and abundance of prey and have negative effects on productivity
- Hazards associated with development:
 - a) Increase in predation of eggs and chicks due to increase in predator numbers
 - b) Increase in predation and nest failure due to increase in lake traffic and recreational disturbance

- c) Toxic contamination
- d) Oil spills
- e) Draining of potholes for road-building and development (Horned Grebe)
- f) Destruction of emergent vegetation near lakefront properties
- g) Decreasing water levels as result of deforestation around wetlands
- h) Eutrophication of lakes from fertilizers (runoff from lawns) degrades prey base

D. Location and condition of key or important habitat areas

Breeding habitat:

- Red-necked Grebe: (very good to pristine habitats, with local differences)
 - Mainly on shallow, freshwater lakes (>2 ha.) or shallow, protected marsh areas and secluded bays of larger lakes, usually with at least some emergent vegetation
- Horned Grebe: (generally pristine, with local differences)
 - Small to moderate sized (0.5–10 ha) fairly shallow, freshwater ponds and marshes with beds of emergent vegetation and substantial areas of open water
 - Secluded bays of larger lakes, usually with at least some emergent vegetation

Nonbreeding habitat: (concern that some are degraded)

- Red-necked Grebe:
 - Coastal marine waters from Yellow Sea to central California
- Horned Grebe:
 - Coastal marine and inshore freshwater habitats from the Yellow Sea to Baja Peninsula

E. Concerns associated with key habitats

See above.

F. Goal: Ensure Red-necked Grebe and Horned Grebe populations remain sustainable throughout their range within natural population-level variation and historic distribution across Alaska.

G. Conservation objectives and actions

Objective: Maintain healthy and viable grebe population levels.

Target: Combined grebe populations in Alaska of $\geq 30,000$ (based on 13 years of aerial surveys²); species difficult to differentiate during aerial surveys.

Measure: population numbers for the different species as indicated by the Alaska Waterfowl Breeding Population survey.

Issue 1: Vulnerable to direct human disturbance (presence and activity at nest and brood sites), traffic, aircraft, pets.

² Data from 2 surveys flown by USFWS-Migratory Bird Management (MBM): the Alaska-Yukon Waterfowl breeding population survey.

Conservation actions:

- a) Conduct education/outreach about human disturbance and ways to mitigate it.
- b) Reduce or mitigate human disturbance by housing/domestic development. Develop management plans for housing development around lakes (Red-necked Grebe) with guidelines for developments and make them available to developers and permittees/regulators.
- c) Develop better restrictions for industry development.
- d) Develop lake activity management plans to control lake-borne disturbance (Red-necked Grebe) with guidelines and make them available to key agencies and users.

Issue 2: During aerial surveys, it is difficult to determine species.

Conservation action: Coordinate air-ground surveys to determine species ratios and different populations.

Issue 3: Currently unable to predict distribution of grebes where aerial surveys do not occur.

Conservation actions:

- a) Develop habitat models to predict lake or habitat preferences.
- b) Determine grebe distribution by working with local communities and field biologists to identify species during other studies.

Issue 4: Unknown molt and winter locations for breeding populations inhibits risk assessment.

Conservation actions:

- a) Implement marking studies.
- b) Coordinate with appropriate agencies to assure conservation of important molting areas.

Issue 5: Previous history of contaminant exposure creates concern for current exposure.

Conservation actions:

- a) Implement contaminant monitoring program.
- b) Conduct information, outreach, and education efforts.
- c) Work with industries, NGOs and agencies to reduce emissions harmful to grebes that would affect grebe habitat.

Issue 6: Grebes are potentially vulnerable to being caught in commercial and subsistence fishing nets (bycatch).

Conservation actions:

- a) Conduct surveys to determine how many grebes are caught in nets and how many hours the nets are fished.
- b) Conduct outreach efforts to reduce bycatch.

Issue 7: Grebes are highly vulnerable to oil spills in coastal marine waters.

Conservation actions:

- a) Determine molting areas (see Issue 4).
- b) Coordinate and provide information on grebe use areas to agencies responsible for oil spill contingency planning and response.

Issue 8: Increase in nest and chick predation due to human-influenced increases in predator numbers.

Conservation actions:

- a) Evaluate if nest and chick predation is a problem.
- b) Conduct outreach and education.
- c) Implement management actions to reduce human impacts that encourage predators.

Issue 9: Uncertain knowledge about basic breeding biology inhibits risk assessment

Conservation action: Conduct studies to answer life history questions that would aid in assessing risk.

Issue 10: Invasive and introduced fish, e.g., northern pike, alter the composition and abundance of prey.

Conservation actions:

- a) Evaluate whether introduction of fish is a problem.
- b) Conduct outreach and education.

H. Plan and time frames for monitoring species and their habitats

Plan proposal: select agencies in partnership

	Time Frame	Lead Agency	Partners	Comments
Grebe Watch	Annual	USFWS-ADF&G	Communities	New (2005) state-funded citizen science project
Arctic Coastal Plain/Alaska Yukon Survey, North Slope Eider Survey	Annual	USFWS-MBM		
Bycatch of grebes	Annual	ADF&G	USGS, USFWS, AMBCC, NOAA, local Native community	
Invasive species	Annual*	ADF&G-USFWS	Local community	

* In coordination with other agencies.

I. Recommended time frame for reviewing species status and trends

Review every 5 years because of changing conditions and gaps in information.

J. Bibliography

Stedman, S.J. 2000. Horned Grebe (*Podiceps auritus*). In: A. Poole and F. Gill, editors. The Birds of North America, No. 465. The Birds of North America, Inc., Philadelphia, PA.

Stout, B.E. and G.L. Nuechterlein. 1999. Red-necked Grebe (*Podiceps grisegena*). In: A. Poole and F. Gill, editors. The Birds of North America, No. 465. The Birds of North America, Inc., Philadelphia, PA.

Loons

A. Species group description

Common name(s): Loons (all 5 species that occur in Alaska [and the world]; these are Yellow-billed Loon, Red-throated Loon, Common Loon, Pacific Loon, and Arctic Loon)

Scientific names: *Gavia adamsii*, *G. stellata*, *G. immer*, *G. pacifica*, and *G. arctica*

B. Distribution and abundance

Range:

Global range comments:

Breeding range: Circumpolar in Arctic, sub-Arctic, and boreal habitats.

Non breeding range: Principally coastal marine waters of northeast and northwest Pacific, and northeast and northwest Atlantic.

State range comments:

Breeding: Alaska's coastal tundra areas and interior wetlands.

Nonbreeding: All coastal marine areas of Alaska south of the Yukon-Kuskokwim Delta.

Abundance:

Global abundance comments: Lack of information.

State abundance comments: 90,000 to 100,000 (breeders) (Groves et al. 1996).

Yellow-billed Loon: 3,500

Red-throated Loon: 10,000

Pacific Loon and Arctic Loon combined: 69,000 (mostly Pacific Loons; Arctic Loons cannot be distinguished from Pacific Loons during surveys)

Common Loon: 9,000

Trends:

Global trends: Lack of information to indicate.

State trends: See Yellow-billed Loon and Red-throated Loon templates for those species.

Common Loon and combined Pacific Loon-Arctic Loon population approximately stable since 1977 (Groves et al. 1996; USFWS survey data³).

³ Data from 2 surveys flown by USFWS-Migratory Bird Management: the Arctic Coastal Plain survey and the Alaska-Yukon Waterfowl breeding population survey

C. Problems, issues, or concerns for species group

- Due to a life history of high adult survival and low productivity, loon populations would be strongly impacted by unusually high levels of adult/mortality, and their low productivity would make it difficult to recover if a decline were to occur
- Their high trophic level predisposes them to bioaccumulation of contaminants
- Wintertime threats unknown, but concern about Asian waters where habitats may be degraded (contaminants, particularly mercury; overfishing; bycatch of loons)
- Breeding area threats include bycatch of loons in commercial and subsistence fishing nets, contaminants, and changes in lake dynamics, breeding season length, and marine fish communities associated with global climate change
- Invasive and introduced fish, e.g., northern pike, can alter the composition and abundance of prey and have negative effects on productivity
- Hazards associated with development:
 - a) Increase in egg and chick predation due to increase in predator numbers
 - b) Increase in predation and nest failure due to increase in air and ground traffic disturbance
 - c) Toxic contamination
 - d) Oil spills
 - e) Eutrophication of lakes from fertilizers (runoff from lawns) degrades prey base

D. Location and condition of key or important habitat areas

See Yellow-billed Loon and Red-throated Loon templates for those species.

Breeding habitat:

- Common Loon: Lakes in forested areas statewide; vary from pristine to degraded
- Pacific Loon: Lakes (smaller than Common Loon, on average) in coastal tundra, and to a lesser extent, in forested areas statewide; vary from pristine to degraded
- Arctic Loon: Similar to coastal tundra habitats used by Pacific Loon, but restricted to northwest Alaska; very good to pristine habitats

Nonbreeding habitat: (concern that some are degraded)

- Coastal marine habitats from the Yellow Sea to Baja Peninsula

E. Concerns associated with key habitats.

See above.

F. Goal: Ensure loon populations remain sustainable throughout their range within natural population-level variation and historic distribution across Alaska.

G. Conservation objectives and actions

Objective: Maintain healthy and viable loon population levels.

Target: (See specific templates for Yellow-billed Loon and Red-throated Loon)

- Common Loon: Maintain a population of 10,000.
- Pacific Loon/Arctic Loon: Maintain a population of 70,000.

Measure: Population numbers as indicated by the Arctic Coastal Plain Survey and the Alaska-Yukon Waterfowl Breeding Population survey.

Issue 1: Vulnerable to direct human disturbance (presence and activity at nest and brood sites), traffic, aircraft, pets.

Conservation actions:

- a) Conduct education/outreach.
- b) Reduce human disturbance in residential and recreational areas by promoting creation of lake management plans (Common Loon, Pacific Loon).
- c) Work with agencies and industry to create appropriate restrictions/guidelines for areas experiencing industrial development.
- d) Lake activity management plans to control lake-borne disturbance (Common Loon, Pacific Loon).

Issue 2: Vulnerable to contaminants because of their high trophic level.

Conservation actions:

- a) Implement contaminant monitoring program (e.g., mercury).
- b) Conduct information outreach and education.
- c) Work with industries and NGOs and agencies to reduce emissions.

Issue 3: Vulnerable to mortality due to lead poisoning by ingesting lead fishing sinkers during foraging in some areas (Common Loon, Pacific Loon).

Conservation actions:

- a) Conduct outreach/education.
- b) Promote use of nontoxic alternatives to lead fishing sinkers.
- c) Monitor the mortality rate due to lead poisoning in Alaska.

Issue 4: Loons are vulnerable to being caught in commercial and subsistence fishing nets as bycatch.

Conservation actions:

- a) Conduct surveys for bycatch on breeding areas related to fishing patterns and intensity
- b) Conduct outreach and education to reduce bycatch.

Issue 5: Loons are highly vulnerable to oil spills in coastal marine waters.

Conservation actions:

- a) Work with industry, NGOs, and agencies to minimize and mitigate these risks.
- b) Conduct marking studies to determine the distribution of the large nonbreeding segment of the population.

Issue 6: Invasive and introduced fish, e.g., northern pike, alter the composition and abundance of prey (Common Loon, Pacific Loon).

Conservation actions:

- a) Evaluate if introduction of fish is a problem.
- b) Conduct outreach/education.

Issue 7: Vulnerable to nest and chick predation due to human-influenced increases in predator numbers.

Conservation actions:

- a) Evaluate if nest and chick predation is a problem.
- b) Conduct outreach/education.
- c) Implement management actions to reduce human impacts that encourage predators.

Issue 8: Human perturbations in water level and water quality may impact productivity (Common Loon, Pacific Loon, Yellow-billed Loon).

Conservation actions:

- a) Recognize where it might be a problem.
- b) Determine the cause and source where there is a problem.
- c) Conduct education/outreach.
- d) Work with industry, communities and ADF&G instream flow program to minimize water level fluctuations on nesting lakes.

Issue 9: Status of Arctic Loon is unknown because of its rare and uncertain distribution in Alaska.

Conservation actions:

- a) Determine their distribution by working with local communities and field biologists to identify species.
- b) Assess genetic differences between Arctic Loon and Pacific Loon.

H. Plan and time frames for monitoring species and their habitats

Plan proposal: select agencies in partnership

	Time Frame	Lead Agency	Partners	Comments
Alaska Loon Watch	Annual	USFWS	Communities	
Southcentral Loon Survey	Annual	USFWS	Fairwinds	
Arctic Coastal Plain/Alaska Yukon Survey, North Slope Eider Survey	Annual	USFWS-MBM		
Contaminants	Biannual*	USFWS-USGS	Alaska Biological Research (ABR), Conoco-Phillips, Biodiversity Research Institute (BRI), EPA, DEC, AMBCC, local and Native community	Rotated among populations
Bycatch of loons	Annual	ADF&G	USGS, USFWS, AMBCC, NOAA, local Native community	
Invasive species	Annual**	ADF&G-USFWS	Local community	

* After initial 5-yr period, conduct productivity, contaminant and fish-prey studies on a rotational basis.

**In coordination with other agencies

I. Recommended time frame for reviewing species status and trends

Review every 5 years because of changing conditions.

J. BibliographyGroves, D.J., B. Conant, R.J. King, J.I. Hodges, and J.G. King. 1996. Status and trends of loon populations summering in Alaska, 1971–1993. *Condor* 98:189–195.**Red-throated Loon****A. Species description****Common name:** Red-throated Loon**Scientific name:** *Gavia stellata*

B. Distribution and abundance

Range:

Global range comments:

Breeding range: Circumpolar in Arctic and sub-Arctic habitats; primarily coastal.

Nonbreeding range: Coastal marine waters of northeast and northwest Pacific, and northeast and northwest Atlantic.

State range comments:

Breeding: Alaska's coastal tundra areas and small numbers in the Interior wetlands.

Nonbreeding: All coastal marine areas of Alaska south of the Seward Peninsula.

Abundance:

Global abundance comments: 300,000+ (breeders) (Barr et al. 2001).

State abundance comments: 10,000 (breeders).⁴

Trends:

Global trends: Lack of information to indicate.

State trends: Population survey data suggests a greater than 50% decline south of the Brooks Range since 1977 (Arctic Coastal Plain data was not collected prior to 1985).⁵

C. Problems, issues, or concerns for species

- Designated by USFWS as a bird of conservation concern (USFWS 2002)
- Wintertime threats unknown, but concern about Asian waters where habitats may be degraded (contaminants, particularly mercury; overfishing; bycatch of loons)
- Breeding area threats include bycatch of loons in commercial and subsistence fishing nets; contaminants; and changes in lake dynamics, breeding season length, and marine fish communities associated with global climate change
- Hazards, particularly for the North Slope, associated with development:
 - a) Increase in predation of eggs and chicks due to increase in predator numbers
 - b) Increase in predation and nest failure associated with increases in air and ground traffic disturbance
 - c) Toxic contamination
 - d) Oil spills

D. Location and condition of key or important habitat areas

Breeding habitat (Barr et al. 2001; USFWS survey data⁶): (generally pristine, with local differences)

- Small, low-lying tundra lakes less than 2 m deep
- Small lakes less than 5 ha
- Within 20 km of the ocean

⁴ Data from 2 surveys flown by USFWS-Migratory Bird Management: the Arctic Coastal Plain survey and the North Slope Eider survey.

⁵ Ibid.

⁶ Ibid.

Nonbreeding habitat (Barr et al. 2001; Schmutz, J., unpublished data) : (concern that some are degraded)

- Coastal marine habitats from the Yellow Sea to Baja Peninsula

E. Concerns associated with key habitats

See above.

F. Goal: Ensure Red-throated Loon populations remain sustainable throughout their range within natural population-level variation and historic distribution across Alaska.

G. Conservation objectives and actions

Objective: Maintain viable Red-throated Loon population levels.

Target: Maintain a population of at least 10,000 to 20,000 adult breeders.

Measure: Population number as indicated by the Arctic Coastal Plain Survey and the Alaska Waterfowl Breeding Population survey.⁷

Issue 1: Surveys not well-designed for loons. Don't know how well surveys measure population; surveys are not designed specifically for loons relative to timing and stratification. The two North Slope waterbird surveys give very disparate views on population trend for this species (greater disparity than for all other species).⁸

Conservation action: Conduct studies to evaluate phenology of birds' arrival and initiation of breeding relative to survey timing and climatic variations. Also, evaluate detectability of breeders vs. nonbreeders and detection differences among observers.

Issue 2: Inadequate survey to monitor.

Conservation action: Implement survey to evaluate current productivity surveys.

Issue 3: Anecdotal evidence indicates that Red-throated Loons are bycatch in commercial and subsistence fishing, but the extent of this problem is unknown.

Conservation actions:

- a) Conduct a survey for Red-throated Loon bycatch on breeding area rivers
- b) Conduct surveys to determine how many loons are caught in nets and how many hours the nets are fished.
- c) Outreach and collaboration (education to reduce bycatch)

Issue 4: Contaminants may reduce productivity and other aspects of demography in Red-throated Loon populations, based on precedence of common loons (Evers 2004).

⁷ Ibid.

⁸ Data from 2 surveys flown by USUSFWS-Migratory Bird Management: the Arctic Coastal Plain survey and the Alaska-Yukon Waterfowl breeding population survey.

Conservation actions:

- a) Institutionalize contaminants monitoring program of loon tissues and prey.
- b) Identify sources of contaminants.
- c) Compare levels observed in loons to other bird populations in the local area.
- d) Identify an acceptable level of contamination for Red-throated Loon; data is available for common loons.

Issue 5: Changes in fish prey abundance may reduce the productivity of loons.

Conservation action: Targeted study areas to conduct sampling, on regular basis, to determine fish abundance (e.g., Alaska blackfish, and rainbow smelt; see both marine and freshwater fisheries strategies).

Issue 6: Concerns about inadequate productivity levels and other life table parameters, particularly in survival rates.

Conservation action: Conduct studies to estimate survival and productivity simultaneously.

Issue 7: North Slope Red-throated Loon may be distinct population and be exposed to higher risk of oil spill/contaminant and other risks, based on knowledge that they winter in East Asia (Schmutz, J., unpublished data).

Conservation actions:

- a) Determine if North Slope population is different (genetically unique) from rest of Alaska population.
- b) If unique, conserve that population.

Issue 8: Summertime distribution of nonbreeders is unknown, which limits adequate assessment of risks posed by oil spills and other disturbances.

Conservation actions:

- a) Conduct marking studies.
- b) Develop conservation measures in identified areas.

Issue 9: Development activity may impact reproductive success (productivity), either through an increase in predation of eggs and chicks due to increase in predator numbers, or through an increase in predation and nest failure due to increase in air and ground traffic disturbance.

Conservation actions:

- a) Measure behavior and demographic parameters in areas likely to be developed. Do in an experimental context to enable ascribing variation in demography to predators or other disturbance.
- b) Monitor predator numbers in newly developed areas.
- c) Implement management actions to reduce human impacts that encourage predators.

H. Plan and time frames for monitoring species and their habitats

Plan proposal: select agencies in partnership

	Time Frame	Lead Agency	Partners	Comments
Arctic Coastal Plain/Alaska Yukon Survey	Annual	USFWS-MBM		
Productivity/Demographic Studies	Annual (for 5 yrs)*	USFWS-USGS	ABR, Conoco-Phillips	
Contaminants	Biannual*	USFWS-USGS	ABR, Conoco-Phillips, BRI, EPA, DEC, AMBCC, local and Native community	Rotated among populations
Bycatch of Red-throated Loon	Annual	ADF&G	USGS, USFWS, AMBCC, local Native community	
Fish-Prey abundance	Annual (tied to productivity studies)*	USGS	ADF&G, USFWS**	Targeted areas
Predator monitoring	Every 3 years	USFWS-USGS	Industry, local Native community	

* After initial 5-yr period, conduct productivity, contaminant and fish-prey studies on a rotational basis if funding is limited.

** Check with fish experts.

I. Recommended time frame for reviewing species status and trends

Review every 5 years, because Red-throated Loons are a species of concern. Individual strategies can be reviewed and modified as needed.

J. Bibliography

Barr, J., J. McIntyre, and C. Eberl. 2001. Red-throated Loon. In A. Poole, and F. Gill, editors. The birds of North America. The Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington, DC. No. 513.

Evers, D.C. 2004. Status assessment and conservation plan for the Common Loon in North America. USFWS, Hadley, MA.

Schmutz, J.A., U.S. Geological Survey, unpublished data.

USFWS (U.S. Fish and Wildlife Service). 2002. Birds of conservation concern 2002. Division of Migratory Bird Management, Arlington, VA. 99 p.

Yellow-billed Loon

A. Species description

Common name: Yellow-billed Loon

Scientific name: *Gavia adamsii*

B. Distribution and abundance

Range:

Global range comments:

Breeding range: High Arctic in United States, Canada, and Russia

Nonbreeding range: Coastal marine waters of northeast and northwest Pacific, and northeast Atlantic.

State range comments:

Breeding: 80% Arctic coastal plain (of these breeders, 91% are within the National Petroleum Reserve-Alaska [NPRRA]), 20% in Seward Peninsula.⁹ May also be on St. Lawrence Island (North 1994).

Nonbreeding: Coastal marine in Southeast and Southcentral, possibly Southwest Alaska.

Abundance:

Global abundance comments: 16,000 (breeders) (Fair 2002).

State abundance comments: 3,500 (breeders).¹⁰

Trends:

Global trends: Lack of information to indicate.

State trends: Data being analyzed by USFWS-MBM, likely to be level or slight decline.

C. Problems, issues, or concerns for species

- USFWS was petitioned to list Yellow-billed Loons as a threatened species, due to the small population size, geographically restricted breeding grounds, and their perceived vulnerability to human impact. Breeding range is expected to experience an increase in disturbance associated with energy development.
- Wintertime threats uncertain but possibly significant; use Asian waters where capture of loons in fishing nets, reduced foraging options for loons due to fishing effects, and contaminants are all factors that are not currently well known but are suspected to potentially be significant to this species. Mercury is a contaminant of particular concern.
- Accidental bycatch of loons in fishing nets (commercial and subsistence) also may be an issue on breeding grounds.

⁹ Data from 2 surveys flown by USFWS-Migratory Bird Management: the Arctic Coastal Plain survey and the Alaska-Yukon Waterfowl breeding pair survey.

¹⁰ Ibid.

<ul style="list-style-type: none"> • Lake dynamics and changing phenology associated with global climate change • Hazards associated with development: <ol style="list-style-type: none"> a) Increase in predation of eggs and chicks due to increase in predator numbers b) Increase in predation and nest failure due to increase in air and ground traffic disturbance c) Toxic contamination d) Oil spills e) Lake draw-downs
<p>D. Location and condition of key or important habitat areas</p> <p>Breeding habitat: (currently they are pristine)</p> <ul style="list-style-type: none"> • Large, low-lying tundra lakes greater than 2 m deep (Earnst et al. 2004). • Large lakes greater than 10 ha (Earnst et al. 2004). • Lakes that are connected to other water bodies (ultimately to creeks and rivers) (Earnst et al. 2004). • Localized pockets of higher concentrations (USFWS survey data¹¹). <p>Nonbreeding habitat: (concern that some are degraded)</p> <ul style="list-style-type: none"> • Coastal marine habitats. In Asia these are southeast Chukotka Peninsula, Kamchatka Peninsula and other areas in southeast Russia, northern Japan, North and South Korea, and northern China (J.A. Schmutz, USGS, unpublished data). In North America, these are St. Lawrence Island, and Southeast and Southcentral Alaska (North 1994).
<p>E. Concerns associated with key habitats</p> <p>See above.</p>
<p>F. Goal: Ensure Yellow-billed Loon populations remain sustainable throughout their range within natural population-level variation and historic distribution across Alaska.</p>
<p>G. Conservation objectives and actions</p> <p>Objective: To maintain the current adult breeding population and sufficient productivity to maintain it.</p> <p>Target: 3500 adult breeders¹² and mean productivity rate (0.45 young in late summer/nest [ABR, unpublished data]).</p> <p>Measure: Population number as indicated by the Arctic Coastal Plain Survey. Target productivity rate from surveys around Colville River Delta,¹³ and in future may be based on a more geographically expansive Productivity Survey.¹⁴</p>

¹¹ Arctic Coastal Plain Survey, flown annually by USFWS (E. Mallek, USFWS-Migratory Bird Management, Fairbanks Office)

¹² Ibid.

¹³ Surveys flown by ABR, Inc. (Fairbanks), with funding from Conoco-Phillips.

¹⁴ Newly initiated survey in 2004; flown by USFWS (E. Mallek) with funding from USGS.

Issue 1: Unsure how well surveys measure population; surveys are not designed specifically for loons relative to timing and stratification. Inadequate information on Seward Peninsula populations.

Conservation action: Conduct studies to evaluate phenology of birds' arrival and initiation of breeding relative to survey timing and climatic variations. Also, evaluate detectability of breeders vs. nonbreeders and detection differences among observers.

Issue 2: Inadequate survey to monitor productivity.

Conservation action: Implement survey that is representative of the Arctic coastal plain population.

Issue 3: Development activity may impact reproductive success (productivity), either through an increase in predation of eggs and chicks due to increase in predator numbers, or through an increase in predation and nest failure due to increase in air and ground traffic disturbance.

Conservation actions:

- a) Measure behavior and demographic parameters in areas likely to be developed. Do in an experimental context to enable ascribing variation in demography to predators or other disturbance.
- b) Monitor predator numbers in newly developed areas.
- c) Implement management actions to reduce human impacts that encourage predators.

Issue 4: Inadequate knowledge of lake-specific nesting distribution within potential development areas.

Conservation actions:

- a) Conduct additional lake circling surveys to identify additional nesting lakes in areas likely to be developed.
- b) Work with industry and agencies to promote specific conservation and mitigation measures for identified nesting lakes.

Issue 5: Lake drawdowns are likely to negatively impact Yellow-billed Loons' reproductive success (Evers 2004).

Conservation actions:

- a) Encourage industry to avoid significant drawdown of Yellow-billed Loon nest lakes during nesting season, either known or predicted.
- b) Refine habitat models to enable better prediction of nest lakes.

Issue 6: Anecdotal evidence indicates that Yellow-billed Loon are bycatch in commercial and subsistence fishing, but the extent of this problem is unknown.

Conservation actions:

- a) Conduct a survey for bycatch on breeding area rivers.
- b) Conduct surveys to determine how many loons are caught in nets and how many hours nets are fished.
- c) Conduct outreach.

Issue 7: Vulnerability of Yellow-billed Loon to oil spills, and other development impacts, is believed to be important, but the effect on nonbreeding adult populations is unknown.

Conservation actions:

- a) Conduct marking studies to understand distribution of nonbreeders
- b) Ensure oil companies have contingency plans for spill response that address needs of wildlife and loons.

Issue 8: Contaminants may reduce productivity and other aspects of demography in Yellow-billed Loon populations, based on precedence of common loons (Evers 2004).

Conservation actions:

- a) Institutionalize a contaminants monitoring program of loon tissues and prey.
- b) Identify sources of contaminants.
- c) Compare levels observed in loons to other bird populations in the local area.
- d) Identify an acceptable level of contamination for Yellow-billed Loon; data is available for common loons.

Issue 9: Lack of knowledge regarding what fish species Yellow-billed Loons use or prefer, thus difficult to predict impact of natural or anthropogenic effects on fish populations on Yellow-billed Loons.

Conservation actions:

- a) Conduct study to identify fish prey selection.
- b) Monitor relevant fish populations.

Issue 10: Uncertain if Yellow-billed Loons breeding in Alaska are demographically and genetically distinct from those elsewhere in the world (central Canada and Russia).

Conservation actions:

- a) Conduct additional satellite tag studies and initiate a population genetic study.
- b) Promote conservation of genetically distinct population segment if warranted.

H. Plan and time frames for monitoring species and their habitats

Plan proposal: select agencies in partnership				
	Time Frame	Lead Agency	Partners	Comments
Arctic Coastal Plain Survey	Annual	USFWS-MBM		
Productivity Survey	Annual	USFWS-USGS	ABR, Conoco-Phillips	
Habitat modeling	By 2006	USFWS-USGS		
Lake Circling survey	annual	USFWS-BLM	USGS	Until all effected areas covered
Industrial effects on loon demographics	3 yrs pre, 3 yrs post	BLM-USFWS	Industry, Fairwinds, BRI	
I. Recommended time frame for reviewing species status and trends				
Review every 5 years or more frequently as needed.				
J. Bibliography				
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