

**PETITION TO DESIGNATE CRITICAL HABITAT FOR THE  
BANBURY SPRINGS LIMPET (*Lanx* sp.)**



Photo: U.S. Fish and Wildlife Service

**Petition Submitted to the U.S. Secretary of Interior  
Acting through the U.S. Fish and Wildlife Service**

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## **I. Summary**

The Banbury Springs limpet (*Lanx* sp.) is a small, aquatic snail that was listed as “endangered” under the Endangered Species Act (ESA) in 1992 (55 FR 59131, 57 FR 59244). The limpet is currently known from four isolated colonies at springs along the middle Snake River in Idaho, with no possible conduit for dispersal or range expansion (FWS 2006). While the ESA may have prevented the extinction of the limpet, the species is not recovered. The snail, restricted to an extremely small range at four vulnerable freshwater springs, is still threatened by many factors that qualified the species for protection under the ESA.

Imperiled species cannot recover, proliferate or expand their range without sufficient, quality habitat. The U.S. Fish and Wildlife Service (Service) is charged under the ESA with recovering the Banbury Springs limpet, and the Act provides a mechanism for identifying and designating critical habitat for listed species. Endangered species with critical habitat designations are more likely to recover than those without such designations.

The Service declined to designate critical habitat for the limpet at the time of listing, claiming that further identification of its small populations and locations of known occurrences would increase threats to the species from over-collecting and vandalism (57 FR 59244, 59254). However, such threats have abated since listing, while regulation and conservation measures, without the underpinning of critical habitat designation, are failing to recover the limpet.

WildEarth Guardians hereby petitions the Secretary of the Interior, pursuant to the ESA and Administrative Procedure Act, to designate critical habitat for the Banbury Springs limpet along the middle Snake River in south-central Idaho to protect remaining populations of the snail and aid the species’ recovery.

## **II. Legal Basis for Petition**

WildEarth Guardians submits this petition for rulemaking under Section 4 of the ESA, which allows an interested person to petition for revision of a critical habitat designation (16 U.S.C. § 1533). We request the Service to revise its 1992 determination that designating critical habitat for the Banbury Springs limpet was “not prudent” based on criteria outlined in the agency’s regulations (50 C.F.R. § 424.12(a)(1)(ii)). As we describe below, factors supporting the Service’s previous determination are less relevant or absent today, while designation of critical habitat is increasingly necessary to protect the limpet from further habitat loss and degradation.

The ESA requires the Secretary of the Interior, acting through the Service, within 90 days of receipt of this petition, to issue a finding “as to whether the petition presents substantial scientific information indicating that the revision may be warranted” (16 U.S.C. § 1533(b)(3)(D)(i)). If the Secretary’s 90-day finding is that the petitioner presented substantial information that may warrant revision of a critical habitat designation, the ESA requires another finding within 12 months, in which “the Secretary shall determine how he intends to proceed with the requested revision” (16 U.S.C. § 1533(b)(3)(D)(ii)).

This petition is also authorized by Section 553 of the Administrative Procedure Act (APA) (5 U.S.C. 553(e)) and implementing regulations (43 C.F.R. § 14.1-4). Section 553 provides that “[e]ach agency shall give an interested person the right to petition for the issuance, amendment, or repeal of a rule” (5 U.S.C. § 553(e)). The APA defines a rule as the whole or a part of an agency statement of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy or describing the organization, procedure, or practice requirements of an agency (5 U.S.C. § 551(4)). We request that the Secretary of the Interior amend or repeal its previous rule denying critical habitat designation to the Banbury Springs limpet, and promulgate a new rule designating critical habitat for the species.

Critical habitat designation is central to achieving the goals of the ESA. The purpose of the Act is to conserve species and the ecosystems on which they depend:

The purposes of this Act are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species... 16 U.S.C. § 1531(b).

Under the ESA, “conserve” is defined as:

...to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking. 16 U.S.C. § 1532(3).

In other words, “conserve” means “recover” under the ESA. Critical habitat designation is essential to recover the Banbury Springs limpet, as it will help shield current habitat from both immediate and more remote threats, and provide prevailing direction for identification and conservation of new habitat for the species.

### **III. Description of Petitioner**

WildEarth Guardians is a nonprofit conservation organization whose mission is to restore wildlife, wild places, and wild rivers in the American West. WildEarth Guardians has over 4,500 members. The organization has an active endangered species protection program that works to obtain or improve ESA protection for a wide variety of imperiled flora and fauna and the ecosystems on which they depend.

### **IV. Banbury Springs Limpet Description, Life History, Distribution**

The Banbury Springs limpet (a.k.a. Banbury Springs lanx) is a small, aquatic snail belonging to the family Lanicidae, a small assemblage of freshwater pulmonates endemic to western North

America. Dr. Terrance J. Frest discovered the species in 1988 at Banbury Springs Creek along the middle Snake River in south-central Idaho (57 FR 59246). While the snail is not yet formally described, the Service and other authority recognize its validity as a species.

Kingdom	Animalia
Phylum	Mollusca
Class	Gastropoda
Subclass	Pulmonata
Order	Basommatophora
Family	Lymnaeidae
Genus	<i>Lanx</i>
Species	(undescribed species)
<i>Source:</i> FWS (2006).	

The Banbury Springs limpet is known for its distinguishable cinnamon-red, conical, pyramid-like shell. The species has only been found in spring run habitat with clear, cold, well-oxygenated water (15-16°C / 59-61°F). Highly oxygenated water is essential because the species lacks specialized respiratory organs; respiration occurs across the skin and mantle tissues (Frest and Johannes 1992). Known habitat also has relatively swift water; the limpet’s conical shape appears to help it to adhere to boulder and cobble substratum in the current. The limpet is typically absent from areas with large aquatic macrophytes or filamentous green algae (e.g., lentic habitats). The species appears to feed on periphyton (e.g., diatoms and algae).

The Banbury Springs limpet was only known from three spring complexes along the middle Snake River (a.k.a. “Hagerman Reach”) in Idaho when it was listed as an “endangered” species in 1992. Surveys have only found one additional colony of the limpet since 1992 (FWS 2006). The four spring complexes are clustered together along 10 river kilometers (rkm) (6 river miles [rm]) along the river. The Service hypothesized that the four colonies were once part of a large, interbreeding population of the *Lanx* (FWS 2006: 11).

Demographic or population trend data for the Banbury Springs limpet is unavailable (FWS 2006). Past surveys have simply reported the existence or absence of the species and, if present, the ratio of individual snails found on each cobble inspected (*see* Myler 2006: 38-43). One study estimated the population of Banbury Springs limpet between 600-1,200 individuals at Thousand Springs in 1992 (FWS 2006, *citing* Frest and Johannes 1999).

Despite the lack of population data, the apparent reduction in the species range, combined with recent field observations of the species, suggest that the total population has declined significantly from historic levels.

<sup>1</sup> The Banbury Springs limpet may be reclassified under genus *Fisherola* (FWS 2006: 6, App. A, IV).

## Known Occurrences of Banbury Springs Limpet

Banbury Springs limpet have “only been found in the largest, deepest, and least disturbed spring run habitats with relatively stable water levels” (Myler 2006: 8, *citing* Frest and Johannes 1992). The following summaries of known colonies of the limpet were developed from information in FWS (2006), Myler et al. (2006) and notices published in the Federal Register.

### **Banbury Springs**

Location of Springs: east side of the Snake River, north of Briggs Spring and south of Box Canyon (rkm 947.9 / rm 589).\

Year Species Discovered at Site: 1988

Location of Colony: the limpet is found in one of five springs that discharge into Morgan Lake.

Management: the Idaho Power Company owns Banbury Springs and has developed a habitat management plan for the site, reclaimed riparian habitat at the springs, and limits access and some uses (e.g., livestock grazing) at the springs. The site is no longer used as a Boy Scouts camp. The power company proposed removing the embankment that creates Morgan Lake to create additional lotic habitat for the limpet. However, upon further assessment, it was determined that drawing down the lake may harm the limpet and/or other sensitive species (FERC 05/15/2009).

### **Box Canyon Springs**

Location of Springs: east side of the Snake River (rkm 947.6 / rm 588.8), south of Thousand Springs and north of Banbury Springs.

Year Species Discovered at Site: 1989

Location of Colony: the limpet is found in a rapid upstream of “Sculpin Pool.”

Management: The Nature Conservancy transferred Box Canyon to Idaho Department of Parks and Recreation in 2006, which turned it into a (low-impact, limited access) nature reserve jointly managed by the Department and the Conservancy. The majority of flow from Box Canyon Springs is diverted from Box Canyon Creek into a flume for delivery to a commercial aquaculture facility.

### **Thousand Springs**

Location of Springs: east side of the Snake River near the town of Hagerman, Idaho, north of the other three springs with the Banbury Springs limpet (rkm 939.7 / rm 583.9).

Year Species Discovered at Site: 1991

Location of Colony: the limpet is found sporadically in the outflow of one spring, which discharges into the North Channel, near the Minnie Milner Diversion.

Management: The Nature Conservancy transferred Thousand Springs Preserve to the Idaho Department of Parks and Recreation. The springs have been heavily altered by diversion for use hydroelectric power plant; water quality is also affected by agricultural runoff.

### **Briggs Springs**

Location of Springs: east side of the Snake River, south of the other three springs with Banbury Springs limpet (rkm 950.2 / rm 590.4).

Year Species Discovered at Site: 1994

Location of Colony: the limpet is found approximately 1.1 km (0.7 mi) from the Snake River, upstream and downstream of the uppermost diversion on Briggs Springs Creek (near the USGS flow gauge).

Management: the headwaters of Briggs Springs and its stream course are privately owned and most of the flow is used for commercial aquaculture. The facility is also permitted to discharge into Briggs Creek. No known conservation measures that benefit the limpet have been implemented at this location.

## **V. Threats to the Banbury Springs Limpet**

The Banbury Springs limpet is still threatened by the same habitat destruction and modification that qualified the species for protection under the ESA eighteen years ago. Water diversion, reduced water quality, and invasive species have further degraded the snail's habitat. Recovery is unlikely without first addressing these threats.

### Habitat Loss, Modification

The Service identified reduction of spring discharge among the most important threats to the Banbury Springs limpet (FWS 2006: App. A, VI). Historic modification of springs, as well as more recent diversions and management of outflow have eliminated habitat for the Banbury Springs limpet at its four known locations. Reduced flow may also hinder range expansion and dispersal to other suitable habitat.

- At Thousand Springs, most of the spring water that once cascaded down cliffs and into the Snake River (North Channel) is now captured for use by a hydroelectric power plant, likely eliminating a great deal of habitat for the limpet (Myler 2006).
- Flows in Box Canyon Creek dropped below 300 cubic feet per second for the first time in history in 2004 (FWS 2006) (despite efforts to recharge the aquifer). Moreover, most (86 percent) of the creek flow is diverted upstream of the existing limpet colony for use by a commercial aquaculture facility (FWS 2006).
- The recent decision not to drawdown Morgan Lake at Banbury Springs means that the outflow from the one spring where the limpet occurs at its type locality ends abruptly at the lake, a lentic environment unsuitable for the species.

- Water diversions from Briggs Spring Creek both upstream and downstream of the known limpet colony limits habitat for the species (FWS 2006).

U.S. Geological Survey records show that the average spring outflow along the Hagerman Reach of the Snake River has declined over the past 50 years from groundwater withdrawal and modern irrigation practices (FWS 2006). Groundwater pumping continues and demand for water is increasing. Future withdrawal is expected to further deplete aquifers and decrease spring flow, despite local and regional efforts to limit water use and recharge the Snake River Plain Aquifer. A decline in coldwater spring flow would affect both water quantity and quality (see below) where Banbury Springs limpet occurs.

Dams on the Snake River (Milner, Upper Salmon Falls, and Lower Salmon Falls) may also threaten the limpet. Prior to modification, the middle Snake River may have served to connect spring-bourne populations of the species (FWS 2006). Now dams have slowed water velocity in the river, allowing for accumulation of sediment and creating unfavorable habitat conditions for the snail.

### Groundwater Quality

Poor groundwater quality—from spring diversions, agricultural return flow, and point and non-point discharge—is also identified as a primary threat to the Banbury Springs limpet. The cumulative effects of increased water temperature, reduced dissolved oxygen, elevated nutrient concentrations, and the accumulation of pollutants and sediment degrades habitat for the species and may limit population growth and dispersal.

Diversion, reduced flow, irrigation returns and discharge into springs can increase water temperature. This can be problematic, since the capacity of water to hold dissolved oxygen decreases with increasing water temperature (FWS 2006, *citing* Mason 1996). The Banbury Springs limpet needs well-oxygenated water and its lack of specialized respiratory organs make the species particularly sensitive to fluctuations in dissolved oxygen (FWS 2006, *citing* Baker 1925). Although increased water temperature does not appear to be an issue where the limpet currently resides, it has been suggested that “any factor that reduces dissolved oxygen concentrations in the water column (e.g., siltation, flow reduction, removal of riparian vegetation, and increased water temperature) for even a few days is likely to prove fatal to all or a majority of [a] population [of Banbury Springs limpet]” (FWS 2006: 14, *citing* Reed et al. 1989).

Accumulation of nutrients—particularly nitrogen and phosphorus—in surface and groundwater can also alter the ecology of freshwater springs. The addition of nitrogen and phosphorus to water courses—from agricultural return flow, livestock production, aquaculture, urban runoff, and municipal wastewater treatment facilities—can lead to algal blooms and increased macrophytes that reduce dissolved oxygen in water and degrade water quality. Nitrogen and phosphorus can infiltrate and percolate into groundwater aquifers (both pollutants have been found in wells along the middle Snake River) that eventually flow into spring habitats (FWS 2006).

Sedimentation is also a concern for Banbury Springs limpet. Diversion structures at Box Canyon and Briggs Springs likely impounded snail habitat, covering cobble substrate with fine sediments (FWS 2006). It is likely that habitat impounded in Morgan Lake at Banbury Springs is also smothered in sediment. The limpet does not use these lentic habitats because it apparently cannot breathe in the silted water.

Contaminants from agriculture, industrial processes, and other sources are also identified as potential threats to Banbury Springs limpet (FWS 2006). Pesticides are prevalent in streams, irrigation canals, and irrigation returns in the Snake River Basin. Historic discharge of wastewater from the Idaho National Laboratory contained tritium, strontium-90, cesium-137, gross alpha-particle radioactivity, and gross beta-particle radioactivity, that are feared to be migrating in groundwater toward springs used by the limpet (FWS 2006). Some environmental pollutants have already been identified in springs used by the snail, including cadmium, lead, barium, chromium, lithium, manganese, and zinc (FWS 2006). Bioaccumulation of metals in aquatic organisms is widely reported, although the immediate and long-term effects of these contaminants on the Banbury Springs limpet are not known.

### Invasive Species

The New Zealand mudsnail (*Potamopyrgus antipodarum*) occurs in all four coldwater springs where Banbury Springs limpet is found (FWS 2006). The mudsnail is a well known invader in the middle Snake River (Shinn 2001). Although the species appears to flourish in highly productive watercourses with low dissolved oxygen and substrates of mud or silt, it has also been recorded at high densities at some cold water springs in the middle Snake River (FWS 2006, *citing* Richards et al. 2004). The mudsnail has been observed near habitat margins where Banbury Springs limpet disappears (FWS 2006). The mudsnail will likely continue to present a threat to the limpet by occupying marginal habitats where the native species may have been found (FWS 2006).

### Climate Change

Climate change is affecting hydrology and ecosystems in the American West. Up to 60 percent of the climate-related trends in river flow, winter air temperature and snow pack between 1950-1999 were influenced by human-induced climate change (Barnett et al. 2008). Climate change is already reducing snowpack in the West (Mote et al. 2005), and is expected to affect the timing and flow from streams, springs and seeps in the region (Saunders et al. 2008, Chambers 2008). Fluctuations in spring flow in the middle Snake River would threaten the Banbury Springs limpet.

## **VI. Failure of Existing Regulatory Mechanisms to Recover the Banbury Springs Limpet**

The Banbury Springs limpet was listed as “endangered” under the ESA in 1992 (57 FR 59244). ESA Section 7 requires federal agencies to evaluate and confer with the Service on any action that may jeopardize a listed species—and *its critical habitat, if any is designated or proposed* (16 U.S.C. § 1536). For the Banbury Springs limpet, such actions may include licenses granted by

the Federal Energy Regulatory Commission for construction and operation of dams on the middle Snake River; permits issued by the Corps of Engineers under the Clean Water Act; federal programs affecting potential recharge of the Snake River Plain Aquifer; and administration of the Environmental Protection Agency's National Pollutant Discharge Elimination System, as it affects water resources (57 FR 59244, 59255). ESA Section 7 consultation may have greater benefit for the limpet if critical habitat was designated for the species.

The Banbury Springs limpet is covered by the Snake River Aquatic Species Recovery Plan (the Service has not developed a separate recovery plan for the snail) (FWS 2006). The Service noted that more is known about the limpet since the Snake River plan was completed in 1995 and recommended updating recovery criteria in the plan based on current information (FWS 2006). The Service also reported that only 0-25 percent of identified recovery objectives for the Banbury Springs limpet had been achieved as of 2005 (FWS 2006). The limpet is not protected under Idaho state law (ICDC c2005), although the Idaho Data Conservation Center recognizes the limpet as a species of greatest conservation need.

Current federal and state regulation of water development appears inadequate to recover the limpet. For example, Idaho state stream flow requirements would not prevent appropriation of an entire freshwater spring for use in aquaculture if it fell within the user's water right (FWS 2006). The colony of Banbury Springs limpet at Box Canyon occurs downstream of an aquaculture diversion and "further reduction or diversion of this coldwater springflow would reduce suitable, available habitat and potentially harm [the] species" (FWS 2006: 18). Even regulated local groundwater withdrawal and diversions from springs or tributary streams can negatively affect the limpet given its limited habitat and sensitivity to water development.

Federal and state regulation of point and non-point source pollution on the middle Snake River is also considered inadequate to protect the springsnail. The Environmental Protection Agency currently permits approximately 80 private or public aquaculture facilities to discharge pollutants into the middle Snake River (FWS 2006). More than 20 additional applications have been filed for discharge permits (FWS 2006). As the Service noted, "[g]iven the increase in permit applications and the record of Clean Water Act violations in Idaho and the Pacific Northwest...threats to aquatic species, including the Banbury Springs lanx, from unexpected point-source discharges are not likely to be eliminated in the immediate future" (FWS 2006: 18).

Threats to Banbury Springs limpet persist, while prospects for recovering the species may be fewer since the limpet was listed in 1992. Upon completion of the five-year review process in 2006, the Service raised the recovery priority number for Banbury Springs limpet from '8' to '6,' based on its limited habitat, high degree of threat, and low potential for recovery (FWS 2006).

In response to these worsening conditions, the Service recommended increased research and monitoring of Banbury Springs limpet, updating the Snake River Aquatic Species Plan Recovery Plan, and attempting translocation of the snail within spring complexes where they currently exist (FWS 2006). Unfortunately, the Service failed to recommend designating critical habitat for the species.

## **VII. Review of “Not Prudent” Critical Habitat Determination for Banbury Springs Limpet**

The Service declined to designate critical habitat for the Banbury Springs limpet when it was listed in 1992 because “[s]ome populations are in localized springs and over-collecting by malacologists or vandalism could occur if their whereabouts were widely known” (57 FR 59244, 59254). Agency regulations provide that designation of critical habitat is “not prudent” when a “species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of such threat to the species” (50 C.F.R. § 424.12(a)(1)(ii)).

Concerns about over-collecting of Banbury Springs limpet or vandalism of its habitat are less pertinent today than in 1992.

- The Boy Scouts camp at Banbury Springs, which the Service deemed an important source of disturbance to the limpet at that site, was closed in 1997 (FWS 2008).
- The nature reserve jointly managed by Idaho Department of Parks and Recreation and The Nature Conservancy at Box Springs Canyon is low-impact and provides only limited access to a small part of the canyon via a hiking trail and viewing platform. (Abundant poison ivy also grows in the canyon, which would help deter off-trail or heavy use of the site).
- While part of Thousand Springs is a state park, the spring at Minnie Miller Diversion where the snail occurs is cut off from public access. There are no trails that lead to the spring and access to the site is difficult.
- Briggs Springs is privately owned and it is assumed the public, including malacologists, is not allowed to use the springs with permission from the landowner.

The Service has historically overstated the threats from over-collection and vandalism that may result from critical habitat designation, and these concerns should not prevent the agency from designating critical habitat to protect and conserve imperiled species (S. Hoffman-Black, pers. comm.). The ESA’s prohibitions on species take and penalties prescribed for violators should help deter misconduct by malacologists and vandals. It should also be noted that the Service has, in its own publications, mapped and described the springs where the Banbury Springs limpet occurs (*see, e.g.*, FWS 2006).

## **VIII. Request for Critical Habitat Designation for Banbury Springs Limpet**

The Service’s assessment of Banbury Springs limpet (as related in the most recent 5-year review in 2006) is sobering:

The primary factors that threaten the existence of the Banbury Springs lanx in its four remaining coldwater spring complexes and tributaries of the middle Snake River include the effects from habitat modification, spring flow reduction, reduced groundwater quality, the invasive New Zealand mudsnail, and inadequate regulatory mechanisms. ... Habitat modification has affected this species by reducing the availability of suitable coldwater spring habitats. ... Coldwater springflows from the Snake River aquifer at the four Banbury Springs lanx sites are also declining. As spring flows continue to decline throughout the range of this species, flows appropriated for hydroelectric power generating facilities and

coldwater springflows diverted for aquaculture facilities and other uses will continue to compete for and likely reduce the available water for the Banbury Springs lanx. Degraded groundwater quality of the Snake River aquifer from agricultural and aquaculture practices will continue to affect the coldwater spring outflows upon which this species exists. The non-native New Zealand mudsnail has invaded the coldwater springflows where the Banbury Springs lanx colonies occur, and occupation of nearby coldwater spring habitat could alter the trophic dynamics of these tributary springs. Further, expansion of the mudsnail likely limits the ability of the Banbury Springs lanx to migrate and disperse to other suitable nearby locations. Because this species is currently restricted to four isolated colonies, future stochastic as well as anthropogenic disturbances could negatively impact this species. Existing regulatory mechanisms that oversee groundwater management of the Snake River Plain Aquifer may not be adequate to reverse the declining coldwater spring outflows upon which the Banbury Springs lanx depends. FWS 2006: 19-20

Experts who reviewed the agency's assessment only added to the grim prognosis, noting that it is unlikely that many more populations of the limpet will be found (FWS 2006: App. A, V [Frest]) and that known populations do not have the potential for migration (FWS 2006: App. A, II [Richards]).

Critical habitat can help shield limpet colonies from threats and restore limpet populations at key source habitats. The ESA defines critical habitat as:

- (i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of this Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and
- (ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of this Act, upon a determination by the Secretary that such areas are essential for the conservation of the species.

16 U.S.C. § 1532(5)(A).

To determine critical habitat, FWS must analyze the physical and biological requirements of the Banbury Springs limpet, including:

- (1) Space for individual and population growth, and for normal behavior;
- (2) Food, water, air, light, minerals, or other nutritional or physiological requirements;
- (3) Cover or shelter;
- (4) Sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and generally;

(5) Habitats that are protected from disturbance or are representative of the historic, geographical, and ecological distributions of a species.

50 C.F.R. § 424.12(b).

Based on the statutory definition and agency criteria for critical habitat, WildEarth Guardians requests that the Secretary of Interior, acting through the U.S. Fish and Wildlife Service, revise or repeal the previous “not prudent” critical habitat determination for Banbury Springs limpet and designate critical habitat sufficient to protect the four spring complexes where the species is known to exist, as well as other, potential habitat that may support the species. For an aquatic species like the limpet, it may be important that critical habitat include more than habitat currently occupied by the species to buffer against harmful stochastic events (Carroll et al. 1996: 7). There are springs that exist in between the known occurrences of Banbury Springs limpet that, although surveys have not found the species, might support current or future populations of the snail (Myler 2006).

## **IX. Value of Critical Habitat Designation**

*[T]he designation of critical habitat is more important than the designation of an endangered species itself.* – Senator Jake Garn (R-UT)<sup>2</sup>

Habitat loss is the primary cause of species endangerment in the United States, and species recovery requires sufficient, quality habitat. Federally listed species with critical habitat designations are twice as likely to recover as those lacking such designations (Taylor et al. 2005).

Critical habitat designation would allow the Service to more ably address immediate threats to the Banbury Springs limpet and will help focus federal, state and local conservation efforts where they are most important to preserve the species. Critical habitat sets a higher baseline for management activities and can channel new resources into species protection (such as funding to control New Zealand mudsnail).

Critical habitat designation will also bolster the Service to take up more remote threats to the limpet, such as groundwater withdrawal, water pollution, and water management. The middle Snake River (a 121-mile segment) is impacted by dams, agricultural return flow, runoff from 500-600 dairies and livestock feedlots, effluent from over 140 private, state and federal aquaculture facilities, as well as a multitude of point and non-point source discharges (such as municipal sewage outflow) (57 FR 59244). The fate of the limpet will be determined by how the government solves these systematic threats. Critical habitat designation will impose new parameters on federal expenditures, permitting, and regulation as they relate to activities on the middle Snake River.

Critical habitat designation could also provide guidance for federal acquisition of key habitats, including core, buffer, and corridor areas, under ESA Section 5 (16 U.S.C. § 1534). As noted above, it may be important to identify and secure new habitat for the Banbury Springs limpet to establish additional populations of the species.

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<sup>2</sup> 124 CONG. REC. S21, 575 (daily ed. July 19, 1978).

## X. Conclusion

Cold, freshwater springs and associated ecosystems are among the most vulnerable habitats in the West. Springs are foci of anthropogenic activity. Historically developed for agricultural use and power production, many springs along the middle Snake River are also used for aquaculture, recreation and other uses. Freshwater springs across the West have been reduced or dried up completely from water diversion and groundwater withdrawal (*see* Sada 2008). Now a new wave of threats, from climate change to invasive species, threaten the integrity of remaining springs.

The Service listed five Snake River snails under the ESA in 1992, and the Banbury Springs limpet is the rarest of them all. Threats to this species persist and current regulatory mechanisms have not recovered the species. Moreover, it is unlikely that these mechanisms can adequately address long-term threats to the species and its habitat, such as groundwater withdrawal, water diversion and pollution, without the imperative of critical habitat designation. Such a designation will help protect remaining populations of Banbury Springs limpet by prioritizing habitat protection and requiring sustainable use of water resources needed by the snail.

## XI. References

55 Fed. Reg. 59131 (Dec. 18, 1990) (Endangered and Threatened Wildlife and Plants; Proposed Endangered Status for Five Idaho Aquatic Snails).

57 Fed. Reg. 59244 (Dec. 14, 1992) (Endangered and Threatened Wildlife and Plants; Determination of Endangered or Threatened Status for Five Aquatic Snails In South Central Idaho).

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